

# CITY OF NEWTON

PLAN AND PROFILE OF

## REHABILITATION OF WALNUT STREET

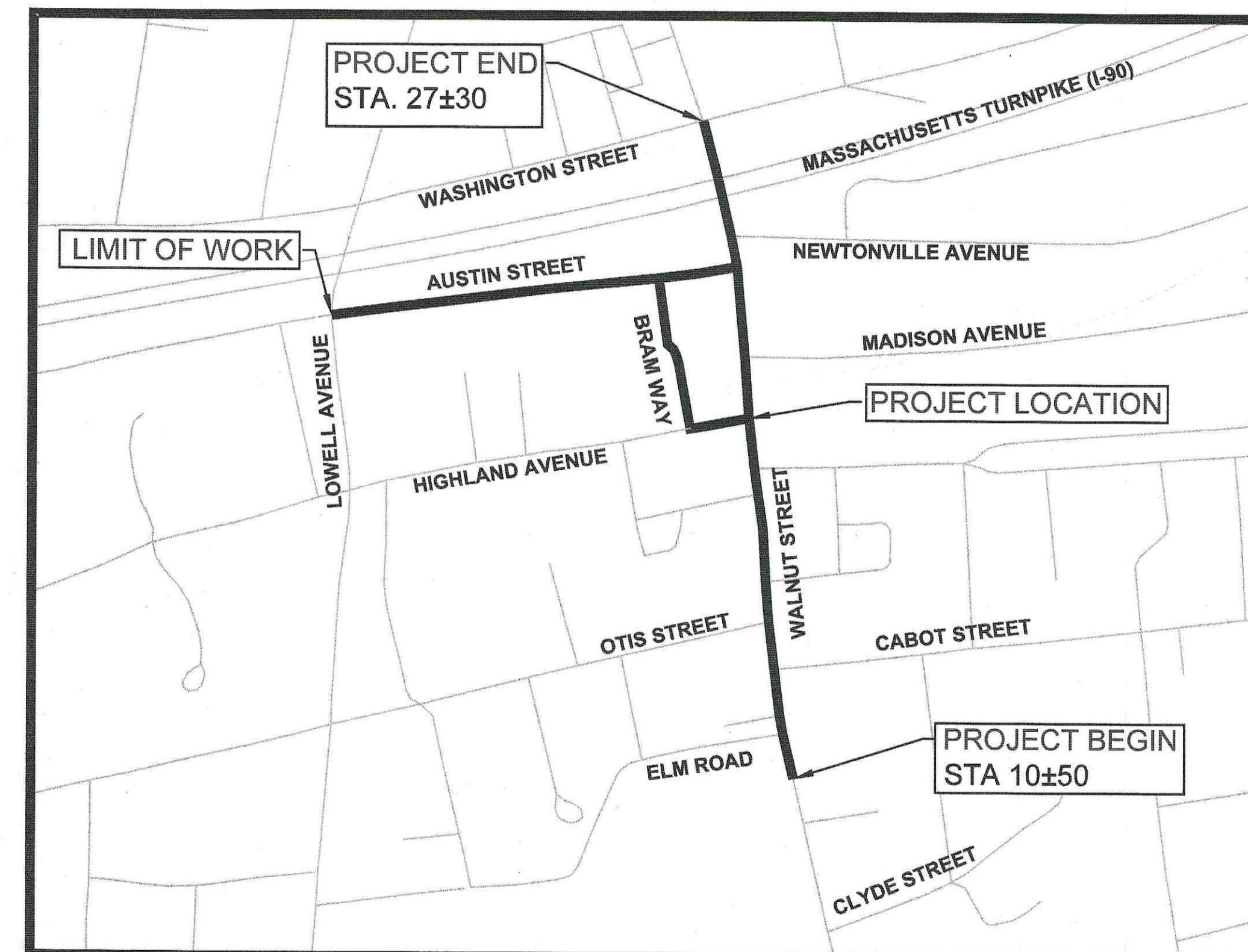
PROJECT # 20-11

AUGUST 2019

### INDEX

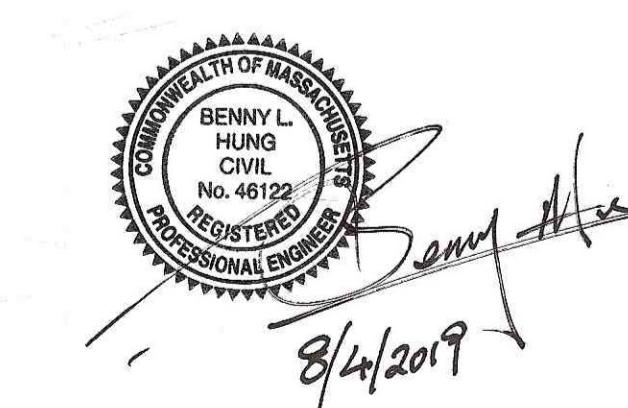
SHEET NO.	DESCRIPTION
01	TITLE SHEET & INDEX
02	LEGEND & ABBREVIATIONS
03	KEY PLAN
04	GENERAL NOTES
05-08	TYPICAL SECTION
09-11	CONSTRUCTION DETAILS
12-13	WHEELCHAIR RAMP / DRIVEWAY DETAILS
14-17	SURVEY CONTROL PLANS
18-21	CONSTRUCTION PLANS
22-24	PROFILE - WALNUT STREET
25-26A	PROFILES - SIDE STREETS
27-30	CURB TIE PLANS
31-34	GRADING PLANS
35-38	UTILITY PLANS
39-43	TRAFFIC SIGNS AND PAVEMENT MARKINGS
44-47	TRAFFIC SIGN SUMMARY SHEET
48-49	TRAFFIC SIGNAL PLANS
50-52	TRAFFIC SIGNAL DETAILS
53-56	TRAFFIC MANAGEMENT PLANS
57	GENERAL NOTES AND SYMBOLS
58	PLANT SCHEDULE
59-62	LANDSCAPE PLANS
63-65	LANDSCAPE ENLARGEMENT PLANS
66-69	LANDSCAPE DETAILS
70-73	SITE PHOTOMETRIC PLANS
74-77	STREET LIGHTING PLANS
78-80	STREET LIGHTING DETAILS

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### LOCUS

SCALE: 1" = 300' APPROX.



### PREPARED FOR:

DEPARTMENT OF PUBLIC WORKS  
CITY OF NEWTON  
110 CRAFTS STREET  
NEWTON, MA 02458

### PREPARED BY:

ENVIRONMENTAL PARTNERS GROUP, INC.  
1900 CROWN COLONY DRIVE, SUITE 402  
QUINCY, MA 02169  
P: 617-657-0200  
F: 617-657-0201

GENERAL SYMBOLS		
EXISTING	PROPOSED	DESCRIPTION
□ JB	□ JB	JERSEY BARRIER
CB	CB	CATCH BASIN
		CATCH BASIN CURB INLET
FP	FP	FLAG POLE
MB	MB	MAIL BOX
	POST SQUARE	
EHH	EHH	ELECTRIC HANDHOLE
O	O	FENCE GATE POST
GG	GG	GAS GATE
BHL #		BORING HOLE
	HYDRANT	
*	*	LIGHT POLE
CO.BD.	COUNTY BOUND	
	GPS POINT	
	CABLE MANHOLE	
D	DRAINAGE MANHOLE	
E	ELECTRIC MANHOLE	
G	GAS MANHOLE	
M	MISC MANHOLE	
S	SEWER MANHOLE	
T	TELEPHONE MANHOLE	
W	WATER MANHOLE	
MHB	MHB	MASSACHUSETTS HIGHWAY BOUND
MON		MONUMENT
SB		STONE BOUND
TB		TOWN OR CITY BOUND
UFB	UFB	TRAVERSE OR TRIANGULATION STATION
UPDL	UPDL	UTILITY POLE W/ FIREBOX
ULT	ULT	UTILITY POLE WITH DOUBLE LIGHT
UPL	UPL	UTILITY POLE W / 1 LIGHT
		UTILITY POLE
SIZE & TYPE		BUSH
		TREE
		STUMP
		SWAMP / MARSH
WG	WG	WATER GATE
PM	PM	PARKING METER
		OVERHEAD CABLE/WIRE
		CURBING
-100--99-		CONTOURS (ON-THE-GROUND SURVEY DATA)
-100--99-		CONTOURS (PHOTOGRAMMETRIC DATA)
		UNDERGROUND DRAIN PIPE (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND ELECTRIC DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND GAS MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND SEWER MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND TELEPHONE DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND WATER MAIN (DOUBLE LINE 24 INCH AND OVER)
		BALANCED STONE WALL
		CHAIN LINK OR METAL FENCE
		WOOD FENCE
		HAY BALES/SILT FENCE
		TREE LINE
		SAWCUT LINE
		TOP OR BOTTOM OF SLOPE
		LIMIT OF EDGE OF PAVEMENT OR COLD PLANE AND OVERLAY
		BANK OF RIVER OR STREAM
		BORDER OF WETLAND
		100 FT WETLAND BUFFER
		200 FT RIVERFRONT BUFFER
		STATE HIGHWAY LAYOUT
		TOWN OR CITY LAYOUT
		COUNTY LAYOUT
		RAILROAD SIDELINE
		TOWN OR CITY BOUNDARY LINE
		PROPERTY LINE OR APPROXIMATE PROPERTY LINE
		EASEMENT

TRAFFIC SYMBOLS		
EXISTING	PROPOSED	DESCRIPTION
Ø1	Ø1	CONTROLLER PHASE ACTUATED
		TRAFFIC SIGNAL HEAD (SIZE AS NOTED)
		WIRE LOOP DETECTOR (6' x 6' TYP UNLESS OTHERWISE SPECIFIED)
		VIDEO DETECTION CAMERA
		MICROWAVE DETECTOR
	*	PEDESTRIAN PUSH BUTTON, SIGN (DIRECTIONAL ARROW AS SHOWN) AND SADDLE
		EMERGENCY PREEMPTION CONFIRMATION STROBE LIGHT
		VEHICULAR SIGNAL HEAD
		VEHICULAR SIGNAL HEAD, OPTICALLY PROGRAMMED
		FLASHING BEACON
	RRSG	PEDESTRIAN SIGNAL HEAD, (TYPE AS NOTED OR AS SPECIFIED)
	RRSG	RAILROAD SIGNAL
	OR O	SIGNAL POST AND BASE (ALPHA-NUMERIC DESIGNATION NOTED)
	20	MAST ARM, SHAFT AND BASE (ARM LENGTH AS NOTED)
		HIGH MAST POLE OR TOWER
		SIGN AND POST
		SIGN AND POST (2 POSTS)
	20*	MAST ARM WITH LUMINAIRE
		OPTICAL PRE-EMPTION DETECTOR
		CONTROL CABINET, GROUND MOUNTED
		CONTROL CABINET, POLE MOUNTED
		FLASHING BEACON CONTROL AND METER PEDESTAL
		LOAD CENTER ASSEMBLY
		PULL BOX 12"x12" (OR AS NOTED)
		ELECTRIC HANDHOLE 12"x24" (OR AS NOTED)
		TRAFFIC SIGNAL CONDUIT

ABBREVIATIONS		
GENERAL		
AADT	ANNUAL AVERAGE DAILY TRAFFIC	
ABAN	ABANDON	
ADJ	ADJUST	
APPROX.	APPROXIMATE	
BB	BITUMINOUS	
BC	BOTTOM OF CURB	
BD.	BOUND	
BL	BASELINE	
BLDG	BUILDING	
BM	BENCHMARK	
BO	BY OTHERS	
BOS	BOTTOM OF SLOPE	
CB	CATCH BASIN	
CBCI	CATCH BASIN WITH CURB INLET	
CEM	CEMENT	
CI	CURB INLET	
CIP	CAST IRON PIPE	
CLF	CHAIN LINK FENCE	
CL	CENTERLINE	
CMP	CORRUGATED METAL PIPE	
CRW	CONCRETE RETAINING WALL	
CSP	CORRUGATED STEEL PIPE	
CO.	COUNTY	
CONC	CONCRETE	
CONT	CONTINUOUS	
CONST	CONSTRUCTION	
CR GR	CROWN GRADE	
DHV	DESIGN HOURLY VOLUME	
DI	DROP INLET	
DIA	DIAMETER	
DIP	DUCTILE IRON PIPE	
DW	STEADY DON'T WALK	
DWY	DRIVEWAY	
ELEV (or EL.)	ELEVATION	
EOP	EDGE OF PAVEMENT	
EXIST (or EX)	EXISTING	
F&C	FRAME AND COVER	
F&G	FRAME AND GRATE	
FLDSTN	FIELDSTONE	
GAR	GARAGE	
GD	GROUND	
GG	GAS GATE	
GI	GUTTER INLET	
HMA	HOT MIX ASPHALT	
HOR	HORIZONTAL	
HYD	HYDRANT	
INV	INVERT	
L	LENGTH OF CURVE	
LP	LIGHT POLE	
LT	LEFT	
MAX	MAXIMUM	
MB	MAILBOX	
MH	MANHOLE	
MHB	MASSACHUSETTS HIGHWAY BOUND	
MIN	MINIMUM	
NIC	NOT IN CONTRACT	
NO.	NUMBER	
PC	POINT OF CURVATURE	
PCC	POINT OF COMPOUND CURVATURE	
P.G.L.	PROFILE GRADE LINE	
PI	POINT OF INTERSECTION	
PKF	PICKET FENCE	
POT	POINT ON TANGENT	
PRC	POINT OF REVERSE CURVATURE	
PRF	POST AND RAIL FENCE	
PROJ	PROJECT	
PROP	PROPOSED	
PT	POINT OF TANGENCY	

ABBREVIATIONS (cont.)		
GENERAL		
PVC	POINT OF VERTICAL CURVATURE	
PVI	POINT OF VERTICAL INTERSECTION	
PVT	POINT OF VERTICAL TANGENCY	
PVMT	PAVEMENT	
PWW	PAVED WATER WAY	
R	RADIUS OF CURVATURE	
R&D	REMOVE AND DISPOSE	
RCP	REINFORCED CONCRETE PIPE	
REM	REMOVE	
RET	RETAIN	
RET WALL	RETAINING WALL	
ROW	RIGHT OF WAY	
R&R	REMOVE AND RESET	
R&S	REMOVE AND STACK	
RT	RIGHT	
SB	STONE BOUND	
SHLDR	SHOULDER	
SMH	SEWER MANHOLE	
ST	STREET	
SSD	STOPPING SIGHT DISTANCE	
SHLO	STATE HIGHWAY LAYOUT LINE	
SMRW	STONE MASONRY RETAINING WALL	
SRW	STONE RETAINING WALL	
SW	SIDEWALK	
T	TANGENT DISTANCE OF CURVE/TRUCK %	
TAN	TANGENT	
TEMP	TEMPORARY	
TC	TOP OF CURB	
TOS	TOP OF SLOPE	
TYP	TYPICAL	
UGE	UNDERGROUND ELECTRIC	
UP	UTILITY POLE	
VAR	VARIES	
VERT	VERTICAL	
VC	VERTICAL CURVE	
VCC	VERTICAL CONCRETE CURB	
WCR	WHEEL CHAIR RAMP	
WG	WATER GATE	
WIF	WROUGHT IRON FENCE	
WIP	WROUGHT IRON PIPE	
WM	WATER METER/WATER MAIN	
TRAFFIC SIGNAL		
CAB.	CABINET	
CCVE	CLOSED CIRCUIT VIDEO EQUIPMENT	
DW	STEADY DON'T WALK	
FDW	FLASHING DON'T WALK	
FR	FLASHING CIRCULAR RED	
FRL	FLASHING RED LEFT ARROW	
FRR	FLASHING RED RIGHT ARROW	
FY	FLASHING CIRCULAR AMBER	
FYL	FLASHING AMBER LEFT ARROW	
FYR	FLASHING AMBER RIGHT ARROW	
G	STEADY CIRCULAR GREEN	
GL	STEADY GREEN LEFT ARROW	
GR	STEADY GREEN RIGHT ARROW	
GSL	STEADY GREEN SLASH LEFT ARROW	
GSR	STEADY GREEN SLASH RIGHT ARROW	
GV	STEADY GREEN VERTICAL ARROW	
OL	OVERLAP	
PED	PEDESTRIAN	
PTZ	PAN, TILE, ZOOM	
R	STEADY CIRCULAR RED	
RL	STEADY RED LEFT ARROW	
RR	STEADY RED RIGHT ARROW	
TR SIG	TRAFFIC SIGNAL	
TSC	TRAFFIC SIGNAL CONDUIT	
W	STEADY WALK	
Y	STEADY CIRCULAR AMBER	
YL	STEADY AMBER LEFT ARROW	

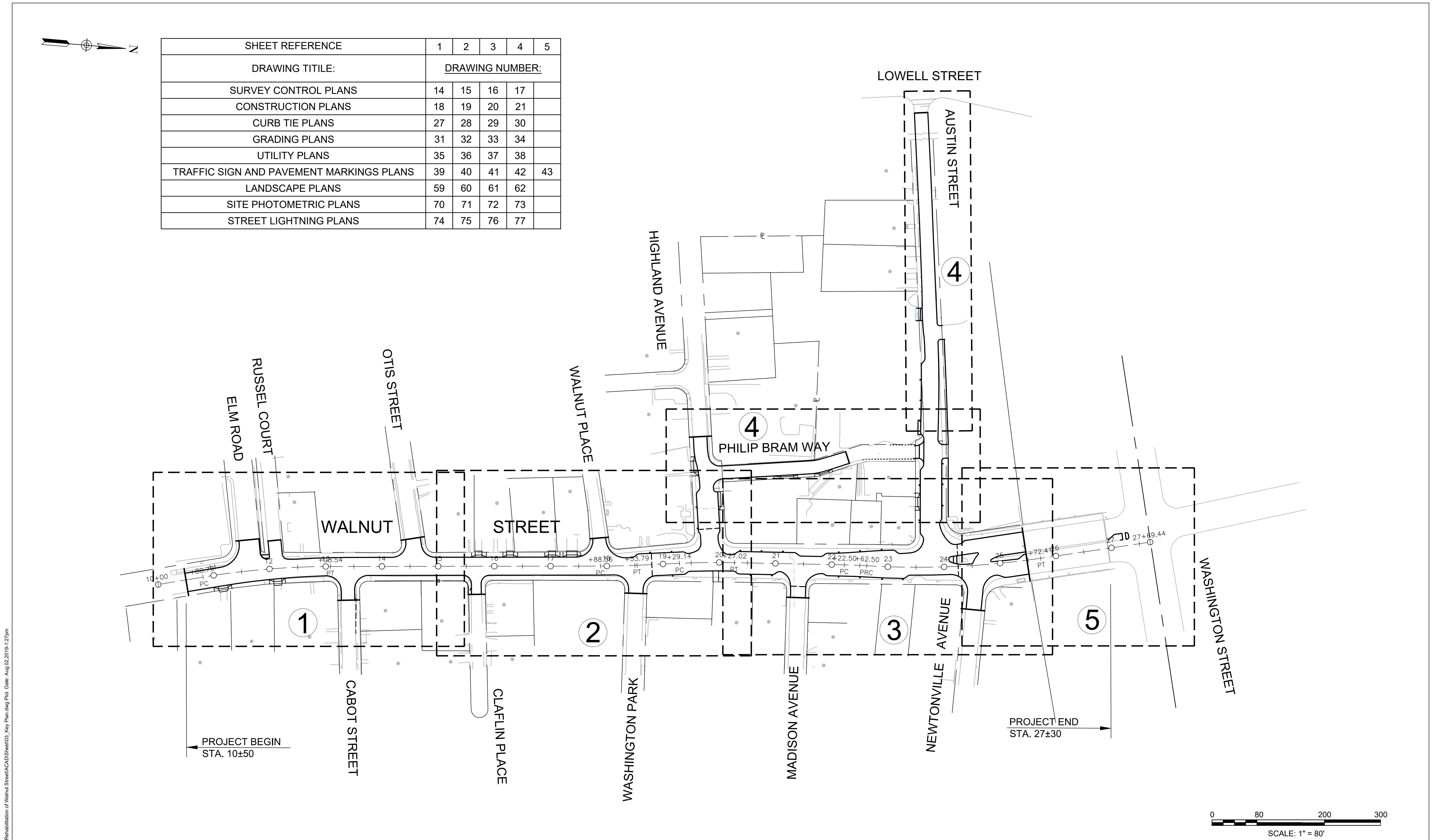


A partnership for engineering solutions.

MARK	DATE	DESCRIPTION	Scale	NTS
			Date	AUGUST 2019
			Job No.	R326-1605.00
			Designed by	JRC
			Drawn by	JRC
			Checked by	BLH
			Approved by	JDF

THIS LINE IS ONE INCH  
LONG WHEN PLOTTED  
AT FULL SCALE ON A  
22" X 34" DRAWING

LEGEND & ABBREVIATIONS  
REHABILITATION OF WALNUT STREET  
NEWTON, MASSACHUSETTS



**Environmental Partners** GROUP  
A partnership for engineering solutions.

MARK	DATE	DESCRIPTION	Scale	AS NOTED
			Date	AUGUST 2019
			Job No.	R326-1605.00
			Designed by	JRC
			Drawn by	KMB
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22" X 34" DRAWING

REHABILITATION OF WALNUT STREET  
NEWTON, MASSACHUSETTS

KEY PLAN

Sheet No.  
**03**  
AS NOTED

**SURVEY NOTES:**

- THE TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED ON AN ON-THE-GROUND SURVEY PERFORMED BY ALLEN & MAJOR ASSOCIATES, INC. BETWEEN NOVEMBER 2016 AND DECEMBER 2016. ADDITIONAL SURVEY ALONG HIGHLAND AVENUE FROM PHILIP BRAM WAY TO WALNUT PACE, PHILIP BRAM WAY FROM HIGHLAND AVENUE TO AUSTIN STREET, AND AUSTIN STREET FROM PHILIP BRAM WAY TO LOWELL AVENUE WAS PERFORMED BY LANTECH, INC. BETWEEN FEBRUARY 2018 AND MARCH 2018 AND INCORPORATED INTO THE BASE PLAN.
- BEARINGS AND DISTANCES AND THE COORDINATES THEY ARE BASED ON SHOWN ON THIS PLAN ARE IN U.S. SURVEY FEET IN THE MA. STATE PLANE COORDINATE SYSTEM REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAVD83), CORS ADJUSTMENT (NA2011/GEOD12A) AS DETERMINED BY GPS OBSERVATIONS PERFORMED IN NOVEMBER OF 2016 UTILIZING MAINE TECHNICAL SOURCE RTK GPS NETWORK.
- BOUNDARY AND RIGHT-OF-WAY LINES SHOWN HEREON ARE APPROXIMATE AND ARE BASED ON A COMPILATION OF RECORD INFORMATION, OBSERVABLE EVIDENCE AND PHYSICAL OCCUPATION. A BOUNDARY SURVEY OF INDIVIDUAL PARCELS WAS NOT PERFORMED.
- THE VERTICAL DATUM FOR THIS PROJECT IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), CORS ADJUSTMENT (NA2011/GEOD12A) AS DETERMINED BY REDUNDANT GPS OBSERVATIONS PERFORMED IN NOVEMBER OF 2016 UTILIZING THE MAINE TECHNICAL SOURCE RTK GPS NETWORK.
- THE ACCURACY OF MEASURED PIPE INVERTS AND PIPE SIZES IS SUBJECT TO FIELD CONDITIONS, THE ABILITY TO MAKE VISUAL OBSERVATIONS, DIRECT ACCESS TO THE VARIOUS ELEMENTS AND OTHER CONDITIONS.
- PRE AND POST CERTIFICATION OF STONE BOUNDS (AND BENCHMARKS) THAT DELINEATE THE CITY RIGHT OF WAY SHALL BE REQUIRED AT THE DIRECTION OF THE CITY ENGINEER AND CONSIDERED INCIDENTAL TO THIS PROJECT. IF REQUIRED THE CERTIFICATION SHALL INCLUDE A SURVEY PLAN, STAMPED BY A PLS REGISTERED IN MASSACHUSETTS AND BE SUBMITTED IN MYLAR AND ELECTRONIC FORMAT TO THE CITY ENGINEER THAT CERTIFIES THE STONE BOUNDS (AND BENCHMARKS) HAVE EITHER BEEN PRESERVED IN THE CORRECT LOCATION OF THEY HAVE BEEN SET AT THE LIMIT OF THE RIGHT OF WAY. THE PLAN SHALL INDICATE BEARINGS AND DISTANCE FOR STRAIGHT SEGMENTS AND RADII FOR CURVED INTERSECTIONS AND ANY ADDITIONAL INFORMATION AS DIRECTED BY THE CITY ENGINEER.

**GENERAL CONSTRUCTION NOTES:**

- CONSTRUCTION SHALL BE IN CONFORMANCE WITH THE FOLLOWING: THE MASSACHUSETTS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES DATED 1988, AS AMENDED, THE SUPPLEMENTAL SPECIFICATIONS DATED APRIL 1, 2019, THE 2017 CONSTRUCTION STANDARD DETAILS AND AS AMENDED, THE LATEST MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS WITH LATEST REVISIONS AND MASSACHUSETTS AMENDMENTS, THE 1990 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS, THE 1968 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING AND THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK.
- IT IS THE INTENT OF THE DESIGN TO PROVIDE A MINIMUM CONSTRUCTED SIDEWALK WIDTH FOR A PATH OF TRAVEL PAST ALL OBSTRUCTIONS OF 3'-0" CLEARANCE FOR HANDICAP ACCESSIBILITY (IN ACCORDANCE WITH THE LATEST A.D.A. AND MASSDOT REQUIREMENTS). THE CONTRACTOR SHALL VERIFY THAT ALL POTENTIAL OBSTRUCTIONS HAVE BEEN ADDRESSED IN THE PLANS INCLUDING BUT NOT LIMITED TO FOUNDATIONS, SIGNS, MAILBOXES, UTILITY POLES, AND HYDRANTS SO THEY ARE LOCATED TO PROVIDE THIS MINIMUM PATH OF TRAVEL CLEARANCE AND A MINIMUM 18" TYPICAL CLEARANCE TO THE FACE OF CURB OR 12" MIN. CLEARANCE WHERE 18" IS NOT FEASIBLE OR PRACTICAL. NO UTILITY POLES OR OBSTRUCTIONS ARE PERMITTED WITHIN WHEELCHAIR RAMPS.
- THE TERM "PROPOSED" (PROP) MEANS WORK TO BE CONSTRUCTED HEREIN USING NEW MATERIALS OR WHERE APPLICABLE, REUSING EXISTING MATERIALS IDENTIFIED AS "REMOVE AND RESET" (R&R). ALL OTHER MATERIALS SHALL BE "REMOVED AND DISCARDED" (R&D) OR DISPOSED OF OFF SITE WITH THE EXCEPTION OF MATERIALS LABELED AS "REMOVED AND STACKED" (R&S) WHICH SHALL BE TRANSPORTED AND STACKED AT A LOCATION DESIGNATED BY THE CITY AND OR ENGINEER.
- MAKE ALL NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN ALL NECESSARY CONSTRUCTION PERMITS, PAY ALL FEES INCLUDING POLICE DETAILS AND POST ALL BONDS, IF NECESSARY, ASSOCIATED WITH THE SAME, AND COORDINATE WITH THE OWNER AND THE ENGINEER.
- THE CONTRACTOR SHALL NOT STORE ANY APPARATUS, MATERIALS, SUPPLIES, OR EQUIPMENT ON DRAINAGE STRUCTURES, PRIVATE PROPERTY OR WITHIN 100 FEET OF WETLANDS, UNLESS DIRECTED TO DO SO BY THE CONTRACT DOCUMENTS.
- ALL EXISTING CONDITIONS SHOWN ARE APPROXIMATE AND ARE BASED ON THE BEST INFORMATION AVAILABLE. PRIOR TO THE START CONSTRUCTION VERIFY THAT THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS DO NOT CONFLICT WITH ANY KNOWN EXISTING OR OTHER PROPOSED IMPROVEMENTS. IF ANY CONFLICTS ARE DISCOVERED, NOTIFY THE OWNER AND THE ENGINEER PRIOR TO INSTALLING ANY PORTION OF THE SITE WORK WHICH WOULD BE AFFECTED.
- THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AND STRUCTURES AS INDICATED ON THE DRAWINGS ARE BASED ON RECORDS OF VARIOUS UTILITY COMPANIES, AND WHEREVER POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED UPON AS BEING EXACT OR COMPLETE. VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES AND STRUCTURES IN THE FIELD PRIOR TO THE START OF CONSTRUCTION. CONTACT THE APPROPRIATE UTILITY COMPANY, ANY GOVERNING PERMITTING AUTHORITY IN THE CITY, AND "DIGSAFE" (1-888-344-7237) AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION WORK IN PREVIOUSLY UNALTERED AREAS TO REQUEST EXACT FIELD LOCATION OF UTILITIES. THE CONTRACTOR MUST RESOLVE CONFLICTS BETWEEN THE PROPOSED UTILITIES AND FIELD-LOCATED UTILITIES AND REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR DAMAGES INCURRED AS A RESULT OF UTILITIES OMITTED, INCOMPLETELY OR INACCURATELY SHOWN. THE CONTRACTOR MUST MAINTAIN ACCURATE RECORDS OF THE LOCATION AND ELEVATION OF ALL WORK INSTALLED AND EXISTING UTILITIES FOUND DURING CONSTRUCTION FOR THE PREPARATION OF THE AS-BUILT PLAN.
- THE CONTRACTOR SHALL FILE WORK ORDER FOR ALL UNDERGROUND ELECTRIC SERVICE CONNECTIONS AT THE BEGINNING OF THE CONSTRUCTION DUE TO THE LONG LEAD PROCESS TIME. WORK ORDER SHALL BE SUBMITTED BY THE CONTRACTOR'S LICENSED ELECTRICIAN TO EVERSOURCE ELECTRIC.
- THE CONTRACTOR SHALL COORDINATE ALL ARRANGEMENTS FOR THE ALTERATION AND OR ADJUSTMENT OF ELECTRIC, TELEPHONE, GAS AND ANY OTHER PRIVATE UTILITY.
- SHOULD AN EXISTING UTILITY BE FOUND TO BE IN CONFLICT WITH THE PROPOSED WORK, THE LOCATION, SIZE AND TYPE SHALL BE ACCURATELY DETERMINED WITHOUT DELAY, BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE CITY AND OR ENGINEER FOR RESOLUTION OF THE CONFLICT.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING OR REMODELING ALL DRAINAGE, WATER, OR SEWER STRUCTURES TO THE FINISHED ELEVATION, WITHIN THE LIMITS OF THE PROJECT, UNLESS OTHERWISE NOTED.
- THE CONTRACTOR SHALL PERFORM TEST PITS AT LOCATIONS SHOWN ON PLAN AND AS DIRECTED BY THE CITY AND OR ENGINEER.
- ALL WORK TO COMPLETE THIS PROJECT AS INDICATED ON THE DRAWINGS AND IN THE SPECIFICATIONS IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
- THE CONTRACTOR MUST MAINTAIN ALL EXISTING UTILITIES IN WORKING ORDER AND FREE FROM DAMAGE DURING THE ENTIRE DURATION OF THE PROJECT. REPAIR ANY DAMAGE TO EXISTING UTILITY LINES OR STRUCTURES INCURRED DURING CONSTRUCTION OPERATIONS AT NO COST TO THE OWNER. THE CONTRACTOR IS RESPONSIBLE FOR ALL COST RELATED TO THE REPAIR OF UTILITIES. EXCAVATION REQUIRED WITHIN THE PROXIMITY OF EXISTING UTILITY LINES MUST BE DONE BY HAND.
- COORDINATE ALL TRENCHING WORK WITHIN ROADWAYS WITH THE PROPER LOCAL & STATE AGENCY. THE CONTRACTOR IS RESPONSIBLE FOR ALL TRENCH SAFETY INCLUDING ANY LOCAL AND/OR STATE PERMITS REQUIRED FOR THE TRENCH WORK. IF THIS WORK IS REQUIRED TO OCCUR OUTSIDE THE AGREED UPON HOURS OF OPERATION FOR THE FACILITY, THE CONTRACTOR MUST PLAN ACCORDINGLY.
- INSTALL ALL UTILITY TRENCH WORK PRIOR TO INSTALLING NEW PAVEMENT AS INDICATED ON THE DRAWINGS.
- IMPORT ONLY CLEAN MATERIAL. MATERIAL FROM AN EXISTING OR FORMER 21E SITE AS DEFINED BY THE MASSACHUSETTS CONTINGENCY PLAN 310 CMR 40.0000 WILL NOT BE ACCEPTED.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH AND MAINTAIN ALL CONTROL POINTS AND BENCHMARKS DURING CONSTRUCTION INCLUDING BENCHMARK LOCATIONS AND ELEVATIONS AT CRITICAL AREAS. COORDINATE WITH THE ENGINEER THE LOCATION OF ALL CONTROL POINTS AND BENCHMARKS.

**GENERAL NOTES CONTINUED:**

- SITE LAYOUT SURVEY REQUIRED FOR CONSTRUCTION MUST BE PROVIDED BY THE CONTRACTOR AND PERFORMED BY A MASSACHUSETTS REGISTERED PROFESSIONAL LAND SURVEYOR. AS INCIDENTAL TO THIS PROJECT THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH THE SURVEYOR FOR ALL SITE SURVEY WORK.
- Maintain all grade stakes set by the surveyor. Grade stakes are to remain until a final inspection of the item has been completed by the engineer. Re-staking of previously surveyed site features is the responsibility (including cost) of the contractor.
- Provide all construction service in accordance with applicable laws and regulations regarding noise, vibration, dust, sedimentation containment, and trench work.
- Collect solid wastes and store in a secured dumpster. The dumpster must meet all local and state solid waste management regulations.
- Regularly inspect the perimeter of the property to clean up and remove loose construction debris before it leaves the site. Promptly remove all demolition debris from the site to an approved dump site.
- All trucks leaving the site must be covered.
- Do not wash any concrete trucks onsite. Remove by hand any cement or concrete debris left in the disturbed area.
- Burial of any stumps, solid debris, and/or stones/boulders onsite is prohibited.
- Immediately contact and coordinate with the engineer and owner if any deviation or alteration of the work proposed on these drawings is required.
- At the end of construction, remove all construction debris and surplus materials from the site. Perform a thorough inspection of the work perimeter. Collect and remove all materials and blown or water carried debris from the site.
- The contractor shall provide for the safe and orderly passage of vehicular and pedestrian traffic in areas under construction.
- Shop drawings of all castings, precast concrete structures, pipe and manufactured components shall be submitted for approval before ordering.
- All proposed pavement markings shall meet existing markings at the limits of work.
- Detectable warning panels shall be installed on all wheelchair ramps and shall comply with construction standard E 107.6.5. Payment for detectable warning panels shall be considered incidental to the construction of the wheelchair ramps or sidewalks in which they are being installed. The color of detectable warning panels shall be at the direction of the city.
- See signs and pavement marking plans for proposed signs and disposition of the existing signs within the project limits or as directed by the city.
- Do not scale drawings unless otherwise noted. Written dimensions shall prevail. Report any discrepancies to the engineer immediately.
- The contractor shall comply with all applicable regulations of the occupational safety and health administration (OSHA). The contractor shall restore all public and private property to its pre-construction condition at no additional cost to the city.
- The contractor shall restore all public and private property to its pre-construction condition at no additional cost to the city.
- In those instances where power or telephone pole support is required, the contractor shall provide a minimum 48-hour notification to the respective utility company. No additional payment will be provided for temporary bracing of utilities.
- All structures and pipelines located adjacent to the trench excavation shall be protected and firmly supported by the contractor until the trench is backfilled. Injury to any such structure caused by, or resulting from, the contractor's operations shall be repaired at the contractor's expense. All utilities requiring repair, relocation or adjustment as a result of the project shall be coordinated through the respective utility and the city.
- The contractor is to take special care not to damage trees, bushes, plants, flowers, stone walls, fences, etc. within the construction area unless they are noted to be removed. Contractor shall replace at no cost to owner, all damaged items.
- Contractor shall remove and replace, or repair, all curbs, sidewalks, pavement and other items damaged by his construction activities to at least their original condition, and to the satisfaction of the city and engineer.
- Any traffic signal equipment (lights, conduits, loop detectors) disturbed shall be repaired or replaced by the contractor as directed by the city at the contractor's expense.
- The contractor shall install and maintain traffic control devices as necessary and in accordance with the manual on uniform traffic control devices.
- The contractor shall be required to provide a telephone number where the contractor can be reached 24 hours a day, 7 days a week.
- The location and limits of all on-site work and storage areas shall be reviewed/coordinated with, and acceptable to the city. The contractor shall limit activities to these areas.
- The contractor shall be required to temporarily pave all disturbed travel ways, sidewalks & driveways not under construction or if left during non working hours and as required by the city. See construction detail on sheet 9.
- The contractor shall clean all catch basins within the project limits after the completion of final paving as directed by the city. The cost for this work shall be consider incidental to this project. No additional compensation shall be requested to the city.

**STORMWATER FACILITY OPERATION & MAINTENANCE:**

THE CONTRACTOR IS RESPONSIBLE FOR THE PROPER INSPECTION AND MAINTENANCE OF ALL STORMWATER MANAGEMENT FACILITIES AS OUTLINED BELOW UNTIL SUCH TIME THAT THE ROADWAYS AND ASSOCIATED UTILITIES ARE ACCEPTED BY THE OWNER AND THE ENGINEER.

- Inspect and restore/clean all facilities (inlets, manholes, infiltration basins, etc.) of sediment and debris prior to the owner's acceptance.
- Remove and dispose all sediment and debris at a pre-approved location as approved by the city.
- Refer to the NPDES stormwater pollution prevention plan (SWPPP) for additional information pertaining to stormwater facility operation and maintenance requirements. Maintain a working copy of the SWPPP on site at all times.
- Inspect after every major rainfall event for the entire duration of the construction project and the first 3 months after construction to ensure proper stabilization and construction.
- Maintenance required for drainage structures (inlets, manholes & catchbasins): all drainage structures will be inspected by the contractor to monitor for proper operation, collection of litter or trash, and structural deterioration. The basins will be cleaned of sediment (including sumps) as necessary, and repaired when required.

**EROSION & SEDIMENT CONTROL (ESC) NOTES:**

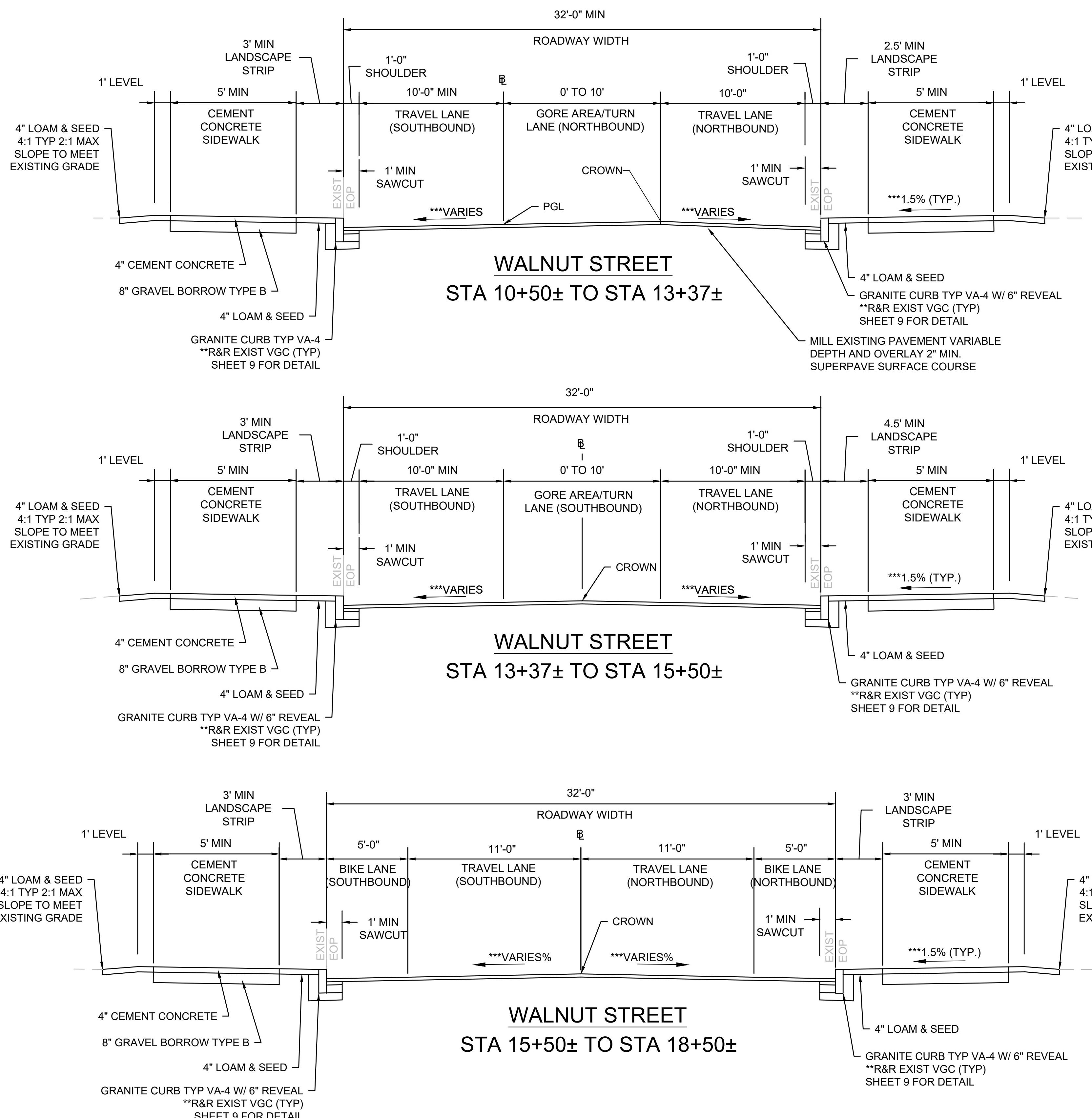
- The contractor shall designate on-site personnel responsible for the daily inspection and maintenance of all sediment and erosion controls and implementation of all necessary measures to control erosion and prevent sediment from leaving the site.
- Install all erosion and sediment control (ESC) measures as indicated on drawings in consultation with the engineer before any construction activities begin. Inspect, maintain, repair and replace erosion control measures, as necessary, during the entire construction period of the project. The site perimeter erosion controls are the designated limit of work. Inform all personnel working on the project site that no construction activity is to occur beyond the limit of work at any time throughout the construction period.
- Keep the limit of clearing, grading and disturbances to a minimum within the proposed area of construction. Phase the site work in a manner to minimize areas of exposed soil. If trees are to be cut, clear and grub only those areas which are actively under construction. Properly install the sedimentation controls prior to beginning any land clearing activity and/or other construction related work.
- Monitor local weather reports during construction and prior to scheduling earthmoving or other construction activities which leave large disturbed areas unstabilized. If inclement weather is predicted, use best professional judgement and good construction practices when scheduling construction activities and ensure the necessary erosion control devices are installed and functioning properly to minimize erosion from any impending weather events.
- Inspect erosion and sediment control devices and stabilized slopes on a weekly basis and after each rainfall event of .25 inch or greater. Repair identified problems within 24 hours to ensure erosion and sediment controls are in good working order. Reset or replace materials as required.
- Surround the perimeter of soil stockpiles with silt sock, silt fence, strawbales, or a combination of silt fence with strawbale, as determined necessary.
- Disturbed areas and slopes must not be left unattended or exposed for excessive periods of time such as the inactive winter season. Provide appropriate stabilization practices on all disturbed areas as soon as possible but not more than 14 days after the construction activity in that area has temporarily or permanently ceased. Reinforce temporary areas having a slope greater than 4:1 with erosion blankets or approved equal until the site is properly stabilized. Temporary swales may also be required if determined necessary in the field by the engineer.
- Install a catch basin silt sack or approved equivalent in each existing catch basin receiving runoff from the site. Upon the installation of each catch basin, install silt sack or approved equivalent. Inspect silt sacks, after each significant storm event and remove and empty as needed for the duration of the construction period.
- Small sedimentation basins may be constructed on an as-needed basis during construction to aid in the capture of site runoff and sediment. It will be the responsibility of the site contractor, in consultation with the engineer, to size and create these basins in appropriate locations.
- Contain all sediment on site. Sweep all exits from the site as necessary including any sediment tracking. Sweep paved areas as needed to remove sediment and potential pollutants accumulated during site construction.
- Remove accumulated sediment from all temporary practices and dispose of in a pre-approved location.
- To ensure all erosion and sedimentation control devices are properly maintained and repaired in a timely and responsible manner, provide on site or make readily available, the necessary equipment and site personnel during construction hours for the duration of the project. If site work is suspended during the winter months the contractor must continue to provide personnel and equipment on site or readily available.
- Control dust by watering or other approved methods as necessary, or as directed by the engineer.



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Scale	NTS
Date	AUGUST 2019
Job No.	R326-1605.00
Designed by	JRC
Drawn by	KMB
Checked by	BLH
Approved by	JDF

REHABILITATION OF WALNUT STREET NEWTON, MASSACHUSETTS		
GENERAL NOTES		
Sheet No. 04 AS NOTED		

**PAVEMENT NOTES****PROPOSED PAVEMENT MILLING & OVERLAY**

**SURFACE:** 2" SUPERPAVE SURFACE COURSE (SSC - 12.5) OVER ASPHALT EMULSION FOR TACK COAT (RS-1H) @ 0.07 GAL/SY OVER

**\*LEVELING:** VARIABLE DEPTH AS DIRECTED OVER

**MILLING:** VARIABLE DEPTH PAVEMENT MILLING

**PROPOSED FULL DEPTH PAVEMENT RECLAMATION**

**SURFACE:** 2" SUPERPAVE SURFACE COURSE (SSC - 12.5) OVER ASPHALT EMULSION FOR TACK COAT (RS-1H) @ 0.05 GAL/SY OVER

**INTERMEDIATE:** 2" SUPERPAVE INTERMEDIATE COURSE (SIC - 12.5) OVER ASPHALT EMULSION FOR TACK COAT (RS-1H) @ 0.05 GAL/SY OVER

**BASE:** 3.5" SUPERPAVE BASE COURSE (SBC - 37.5) OVER

**SUBBASE:** 12" RECLAIMED SUBBASE MATERIAL

**PROPOSED FULL DEPTH BOX WIDENING LESS THAN 3FT**

**SURFACE:** 2" SUPERPAVE SURFACE COURSE (SSC - 12.5) OVER ASPHALT EMULSION FOR TACK COAT (RS-1H) @ 0.05 GAL/SY OVER

**INTERMEDIATE:** 2" SUPERPAVE SURFACE COURSE (SIC - 12.5) OVER ASPHALT EMULSION FOR TACK COAT (RS-1H) @ 0.05 GAL/SY OVER

**BASE:** 6" HIGH EARLY STRENGTH CEMENT CONCRETE BASE COURSE OVER

**SUBBASE:** 8" GRAVEL BORROW

**PROPOSED HOT MIX ASPHALT DRIVEWAY**

**SURFACE:** 1.5" SUPERPAVE SURFACE COURSE (SSC - 12.5) OVER ASPHALT EMULSION FOR TACK COAT (RS-1H) @ 0.05 GAL/SY OVER  
2" SUPERPAVE SURFACE COURSE (SSC - 12.5) OVER ASPHALT EMULSION FOR TACK COAT (RS-1H) @ 0.05 GAL/SY OVER

**SUBBASE:** 8" GRAVEL BORROW

**PROPOSED CEMENT CONCRETE SIDEWALK**

**SURFACE:** 4" CEMENT CONCRETE OVER  
**SUBBASE:** 8" GRAVEL BORROW

**PROPOSED CEMENT CONCRETE SIDEWALK AT DRIVEWAYS**

**SURFACE:** 6" CEMENT CONCRETE OVER  
**SUBBASE:** 8" GRAVEL BORROW

**PROPOSED CEMENT CONCRETE WHEEL CHAIR RAMP**

**SURFACE:** 4" CEMENT CONCRETE OVER  
**SUBBASE:** 8" GRAVEL BORROW

**PROPOSED LOAM & SEED**

**SURFACE:** 4" LOAM BORROW  
**SUBBASE:** VARIABLE DEPTH SUITABLE EXCAVATED MATERIAL OR ORDINARY BORROW (AS DIRECTED)

**NOTES:**

1. ALL SAWCUTS INCLUDING THOSE IN DRIVEWAYS SHALL BE SEALED WITH A LIQUID ASPHALT SEALER PAID FOR UNDER ITEM 453. HMA JOINT SEALANT.
2. DURING EXCAVATION, MATERIALS DEEMED BY THE CITY AND OR ENGINEER TO BE SUITABLE WILL BE RETAINED OR USED AS ORDINARY BORROW FOR FILL AREA. ANY UNSUITABLE SOILS AS DETERMINED BY THE CITY AND OR ENGINEER SHALL BE REMOVED AND REPLACED WITH SUITABLE SUBBASE AS IDENTIFIED ABOVE.
3. BORROW SHALL ONLY BE USED WHEN NO SUITABLE EXCAVATED MATERIAL CAN BE UTILIZED AS APPROVED BY THE CITY AND/OR ENGINEER.

\*\* PROPOSED NEW GRANITE CURB TYPE VA-4 AS DIRECTED BY THE CITY AND/OR ENGINEER

\*\*\* 0.5%± CONSTRUCTION TOLERANCE



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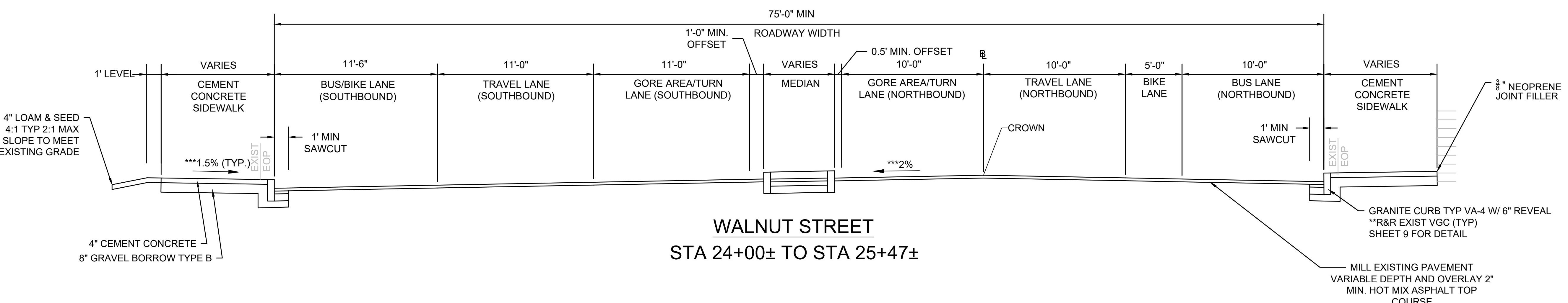
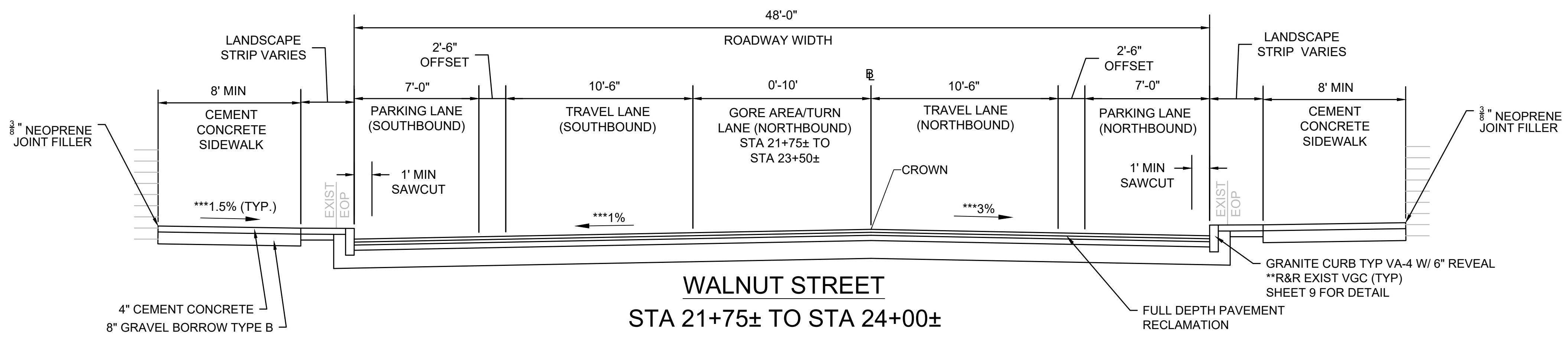
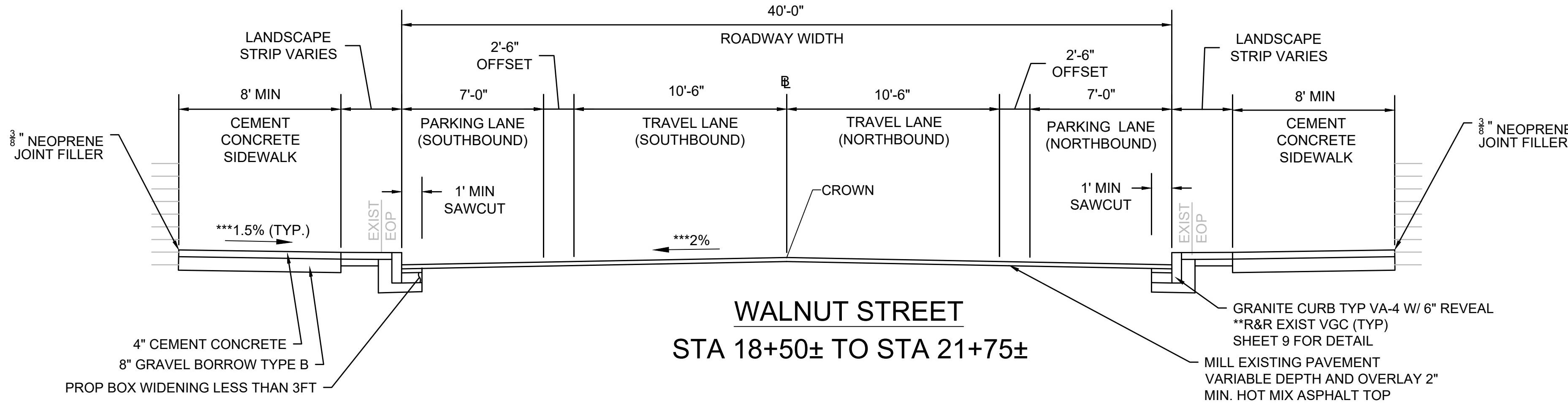
MARK	DATE	DESCRIPTION	Scale	NTS
			Date	AUGUST 2019
			Job No.	R326-1605.00
			Designed by	JRC
			Drawn by	KMB
			Checked by	JRC
			Approved by	JDF

REHABILITATION OF WALNUT STREET  
NEWTON, MASSACHUSETTS

TYPICAL SECTIONS - 01

THIS LINE IS ONE INCH LONG WHEN PLOTTED AT FULL SCALE ON A 22" X 34" DRAWING

Sheet No.  
**05**  
AS NOTED

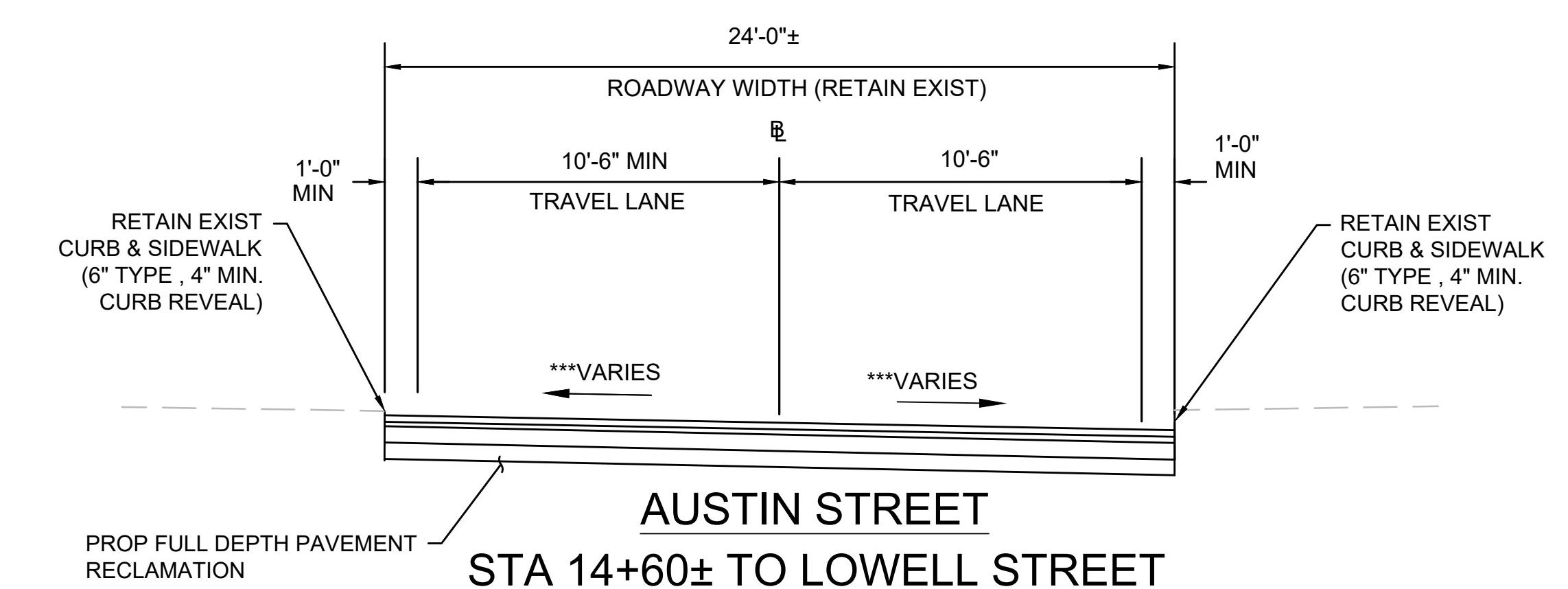
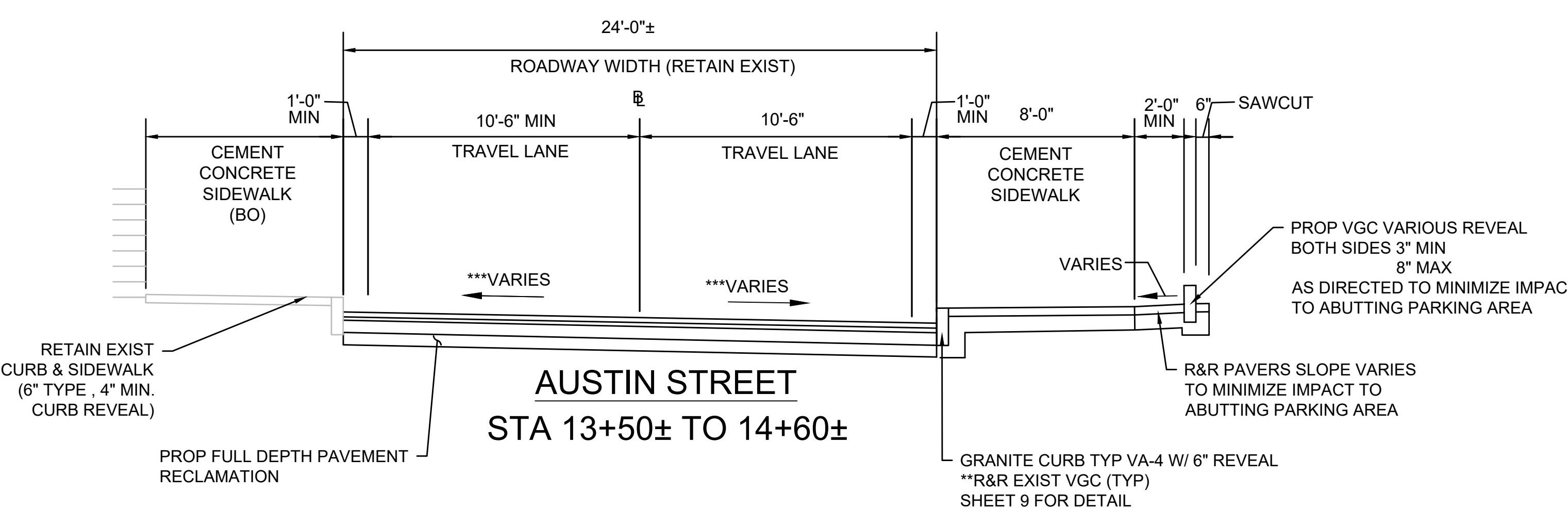
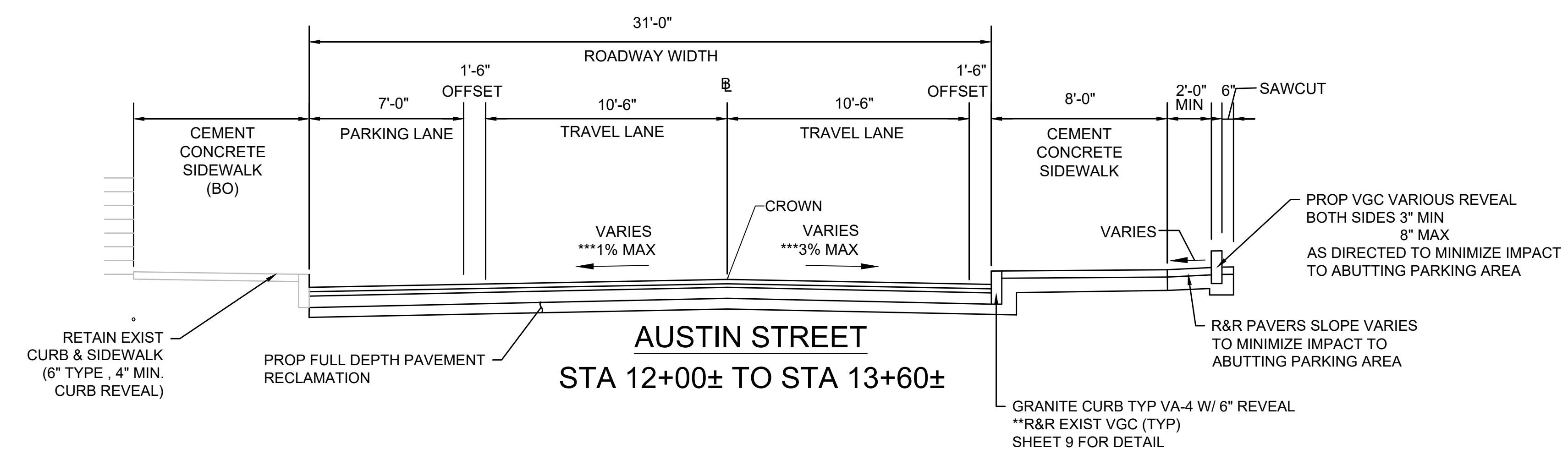
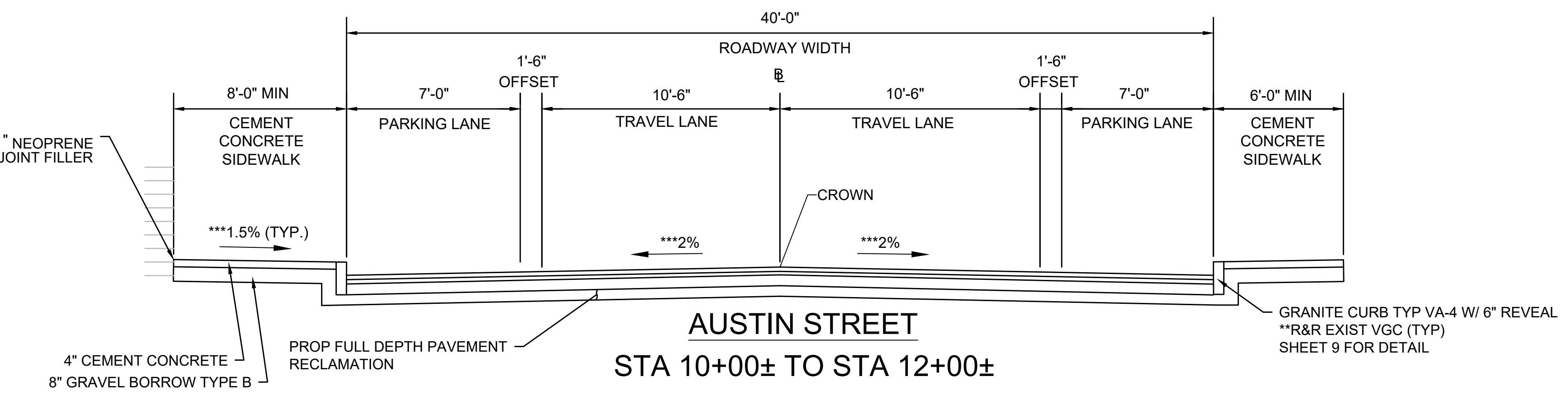


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REHABILITATION OF WALNUT STREET  
NEWTON, MASSACHUSETTS

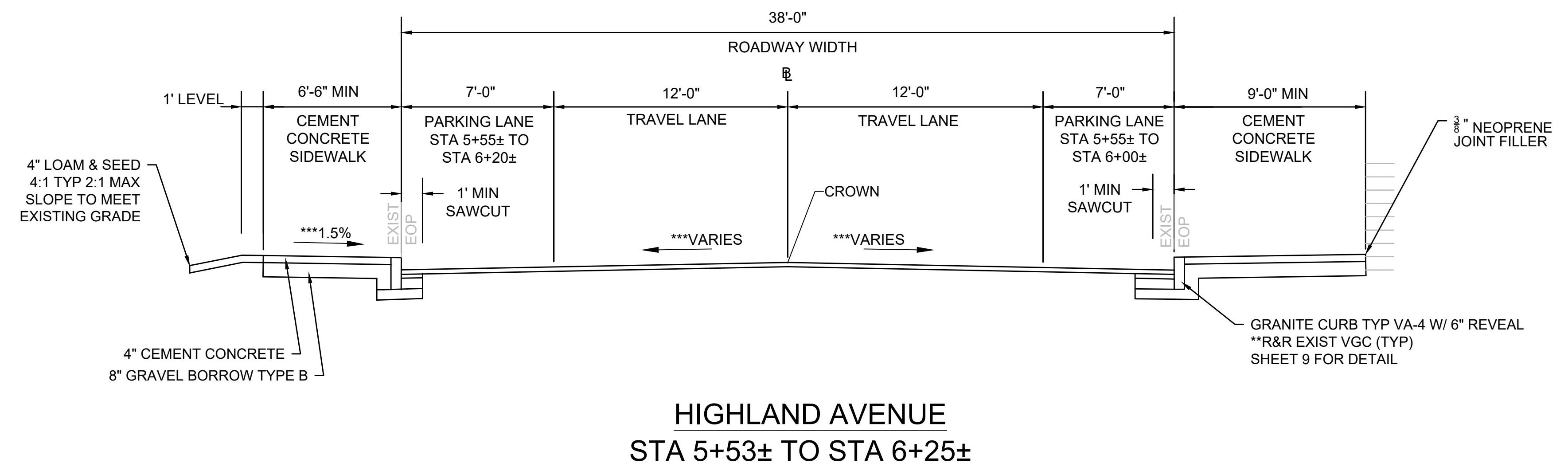
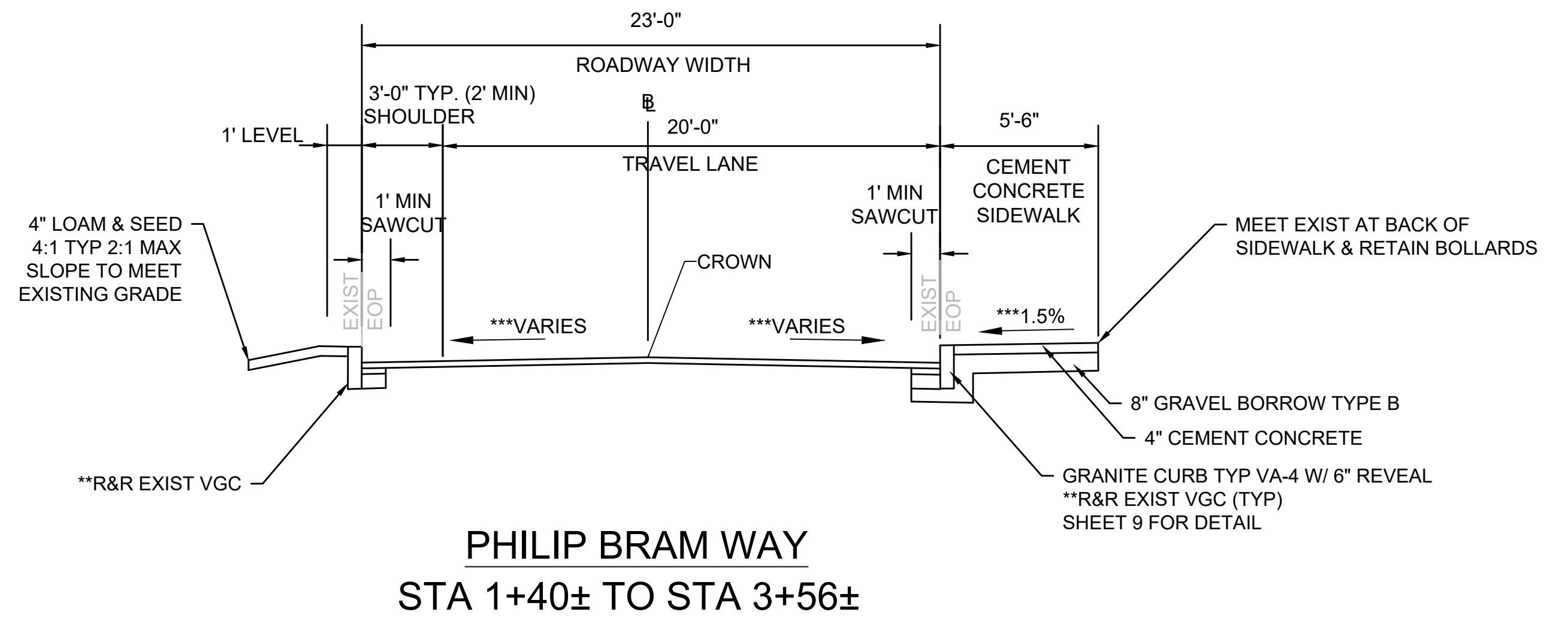
TYPICAL SECTIONS - 02



MARK	DATE	DESCRIPTION	Scale	NTS
			Date	AUGUST 2019
			Job No.	R326-1605.00
			Designed by	JRC
			Drawn by	KMB
			Checked by	JRC
			Approved by	JDF

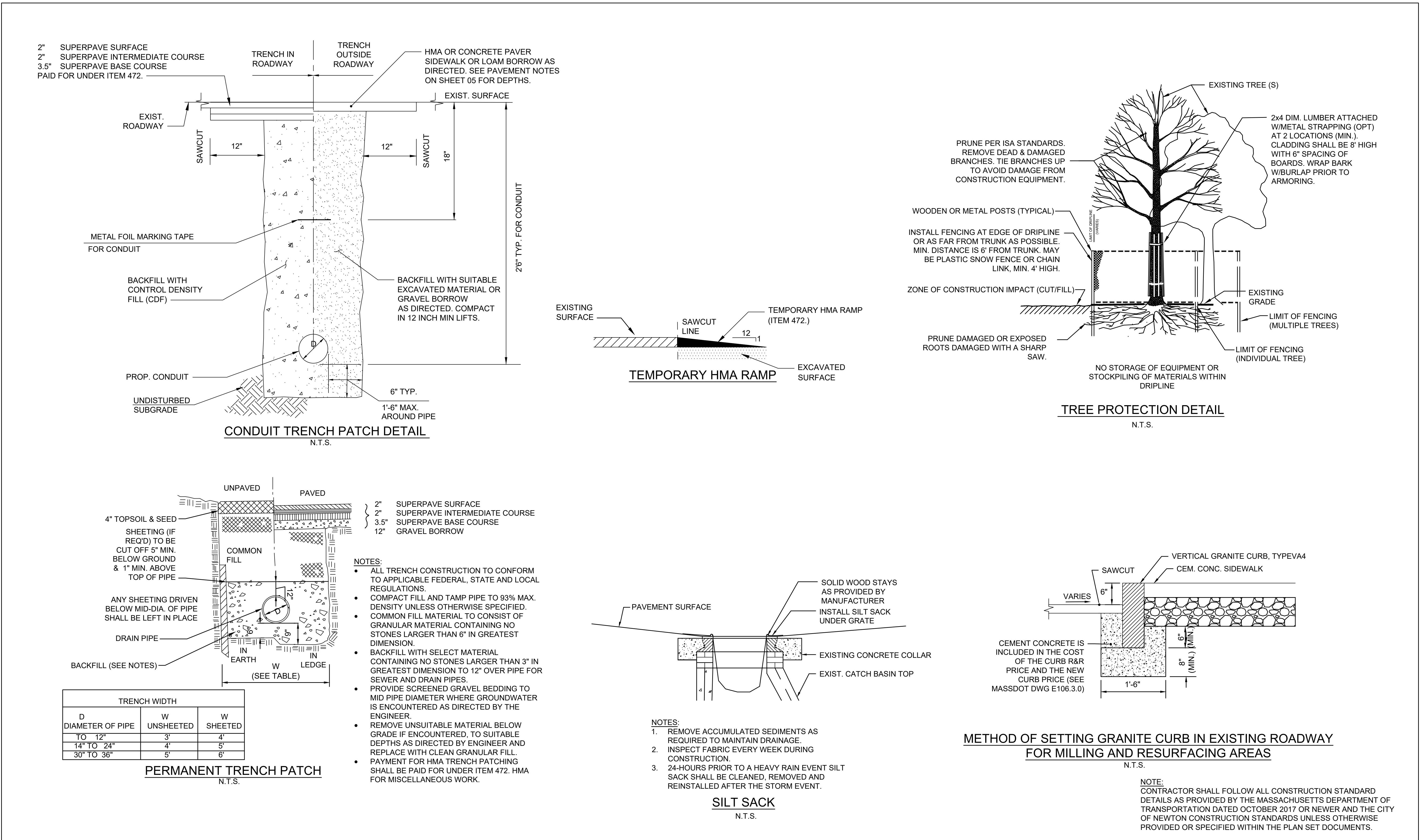
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WHEN PLOTTED AT FULL SCALE ON A  
22" X 34" DRAWING

REHABILITATION OF WALNUT STREET  
NEWTON, MASSACHUSETTS  
TYPICAL SECTIONS - 03

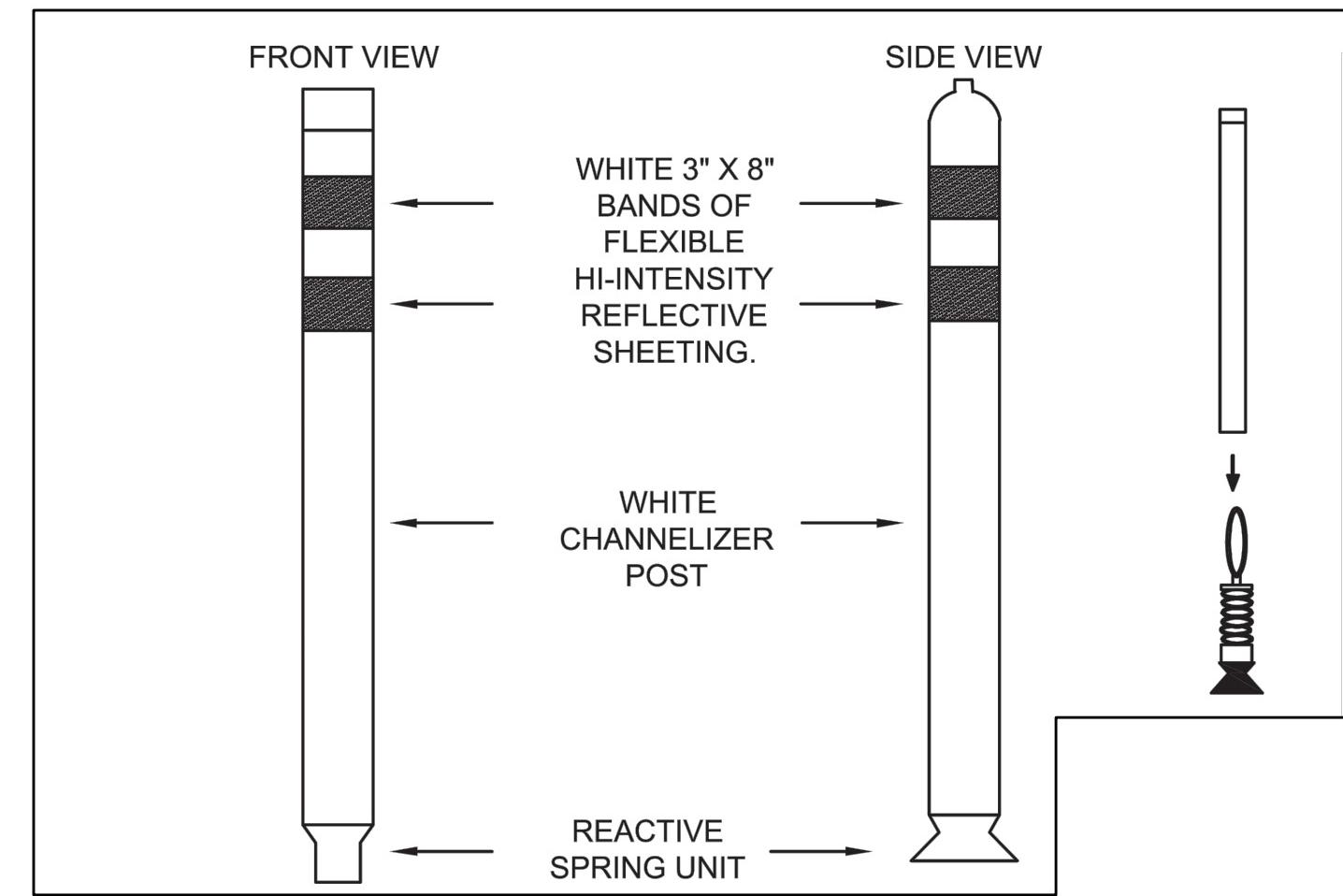
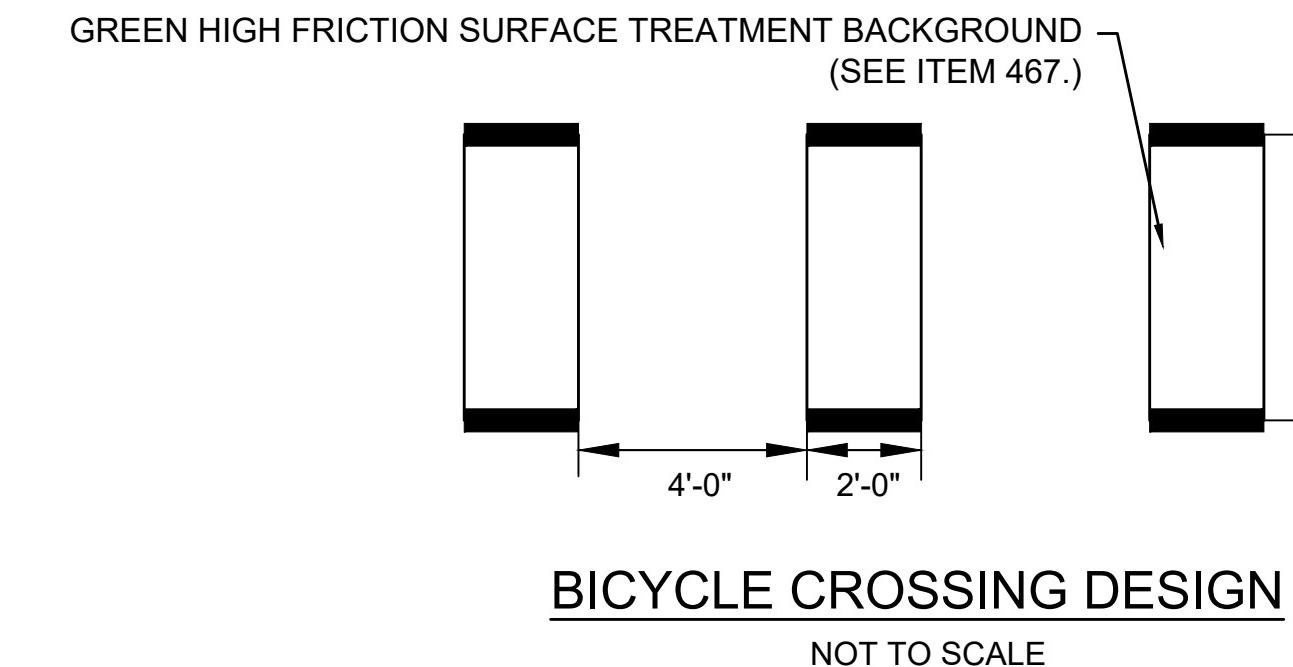
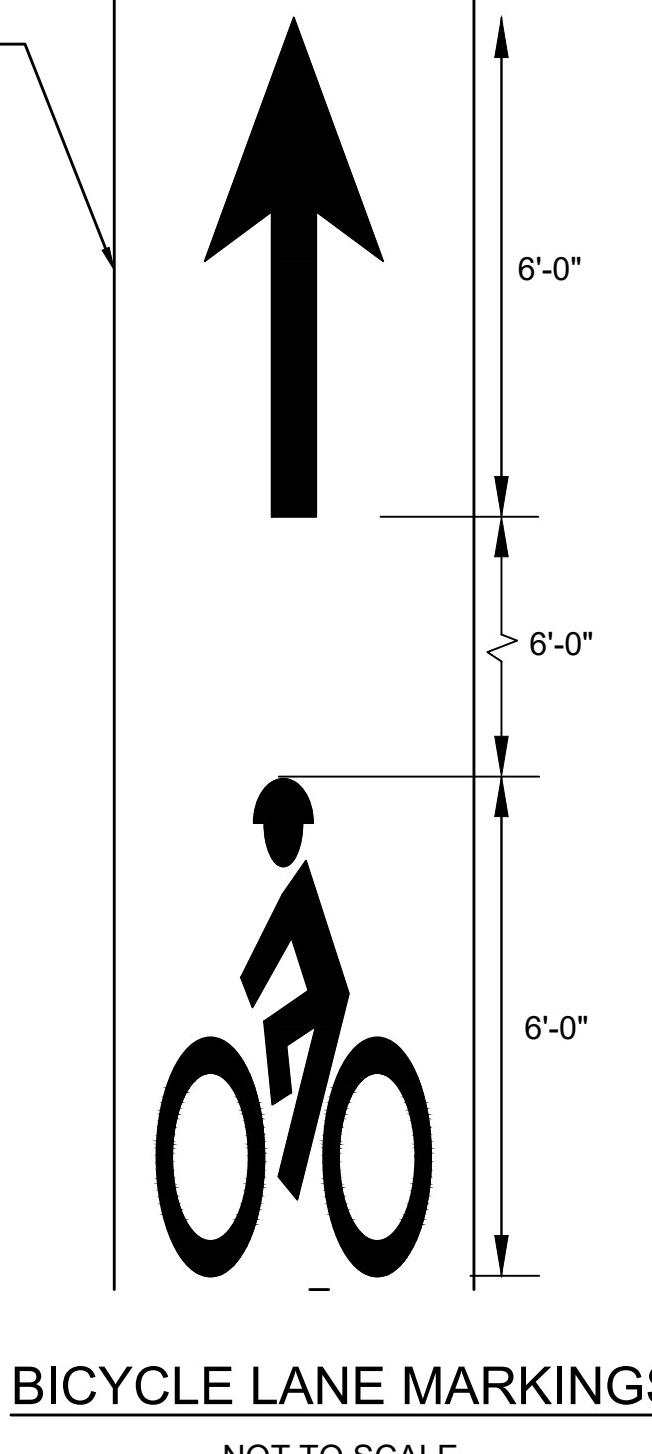
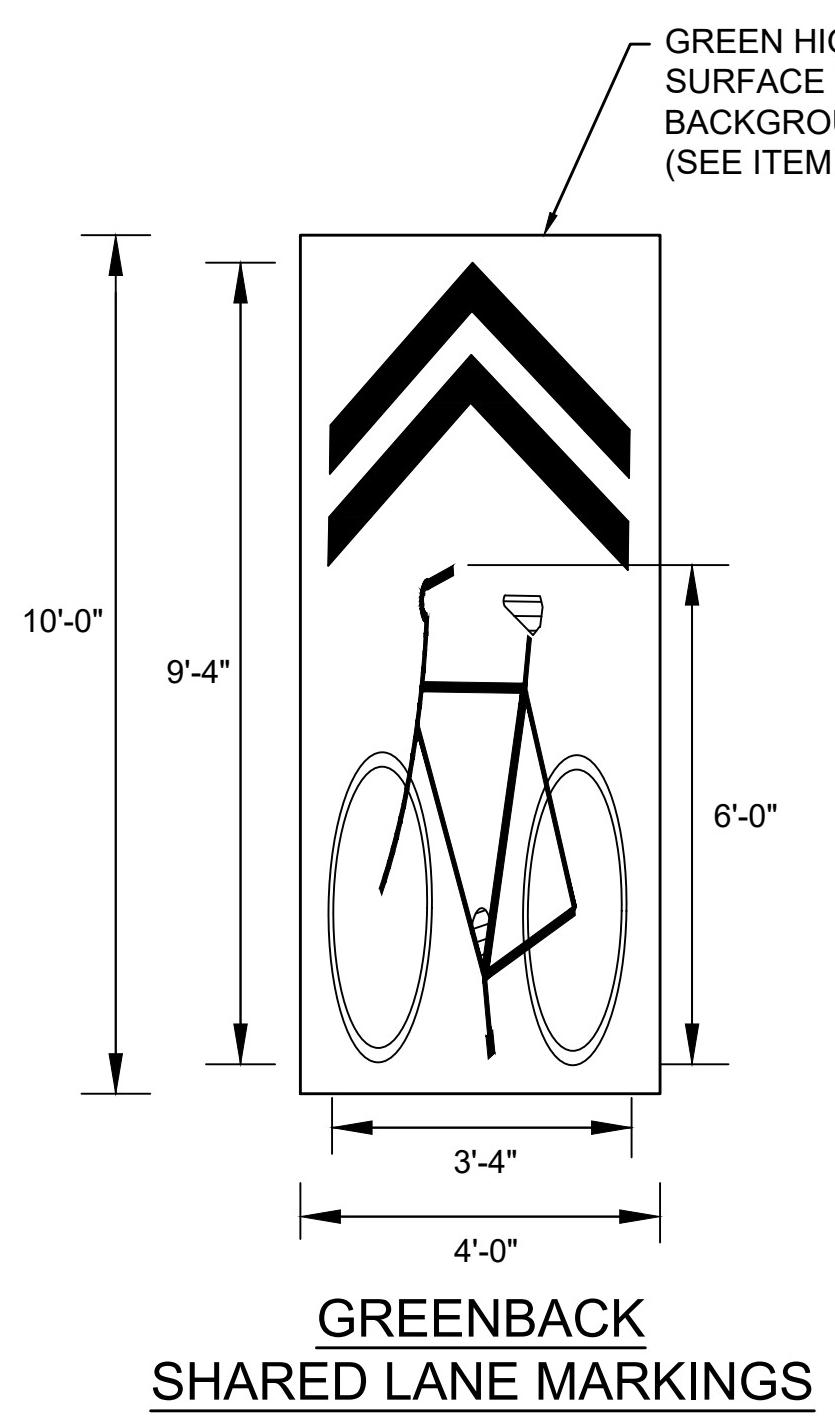


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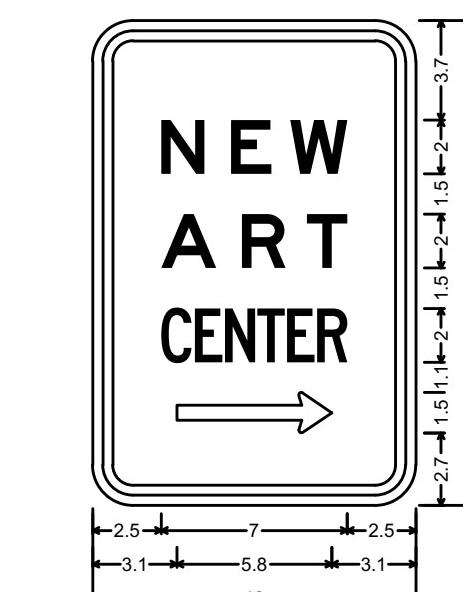
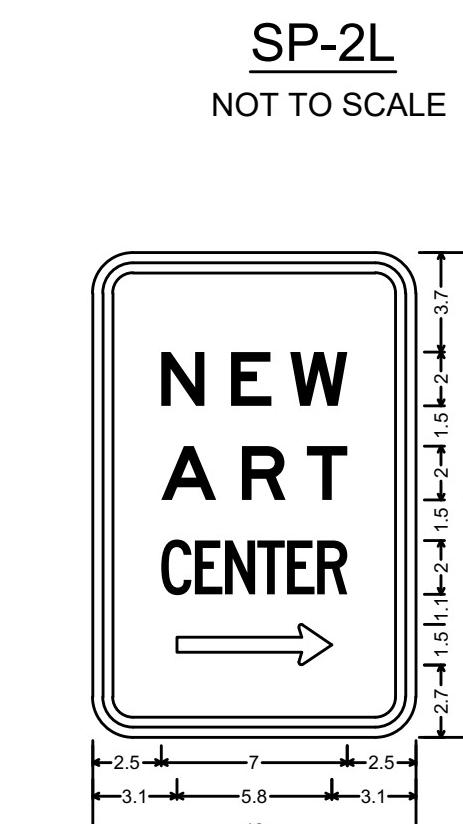
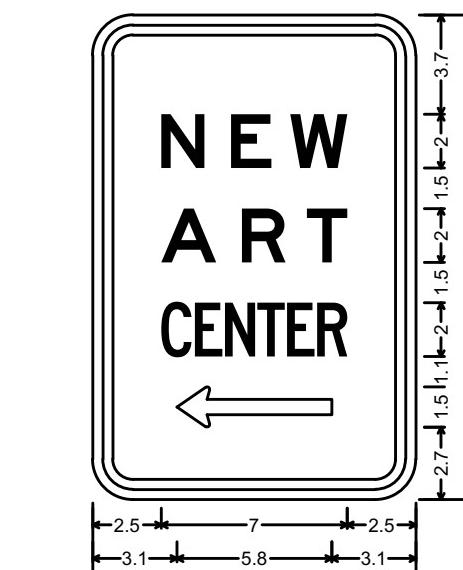
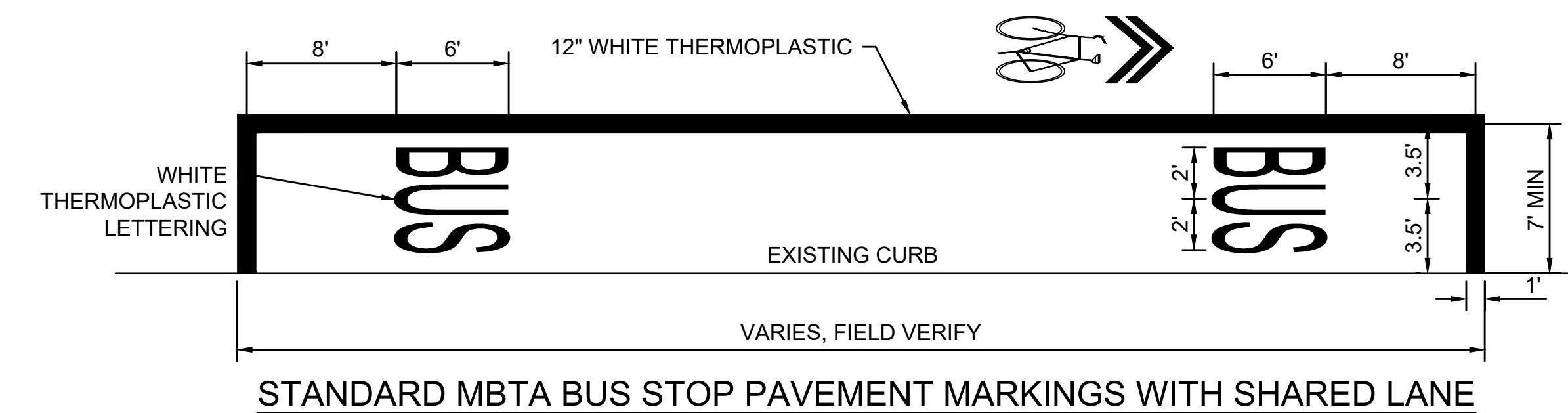
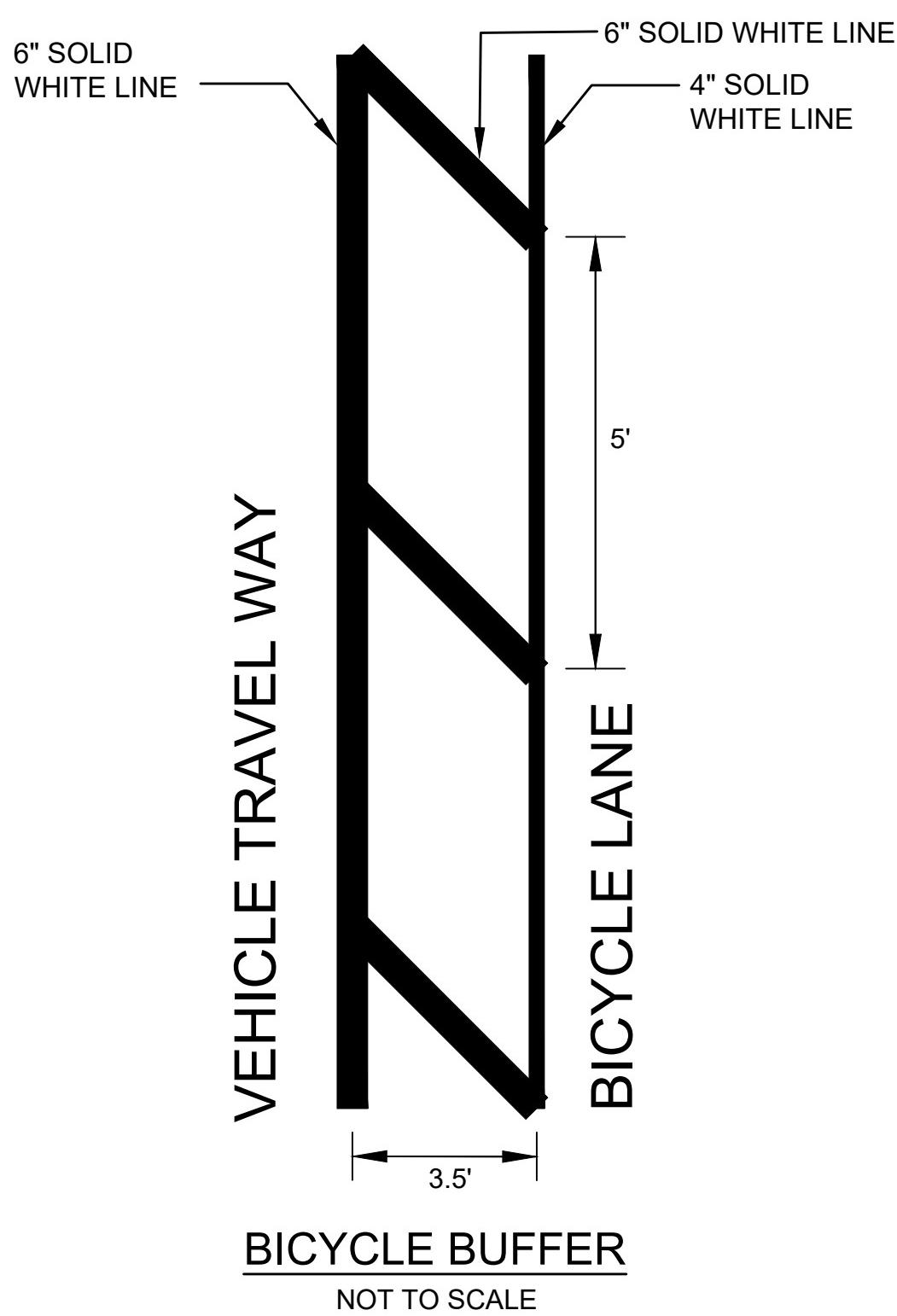


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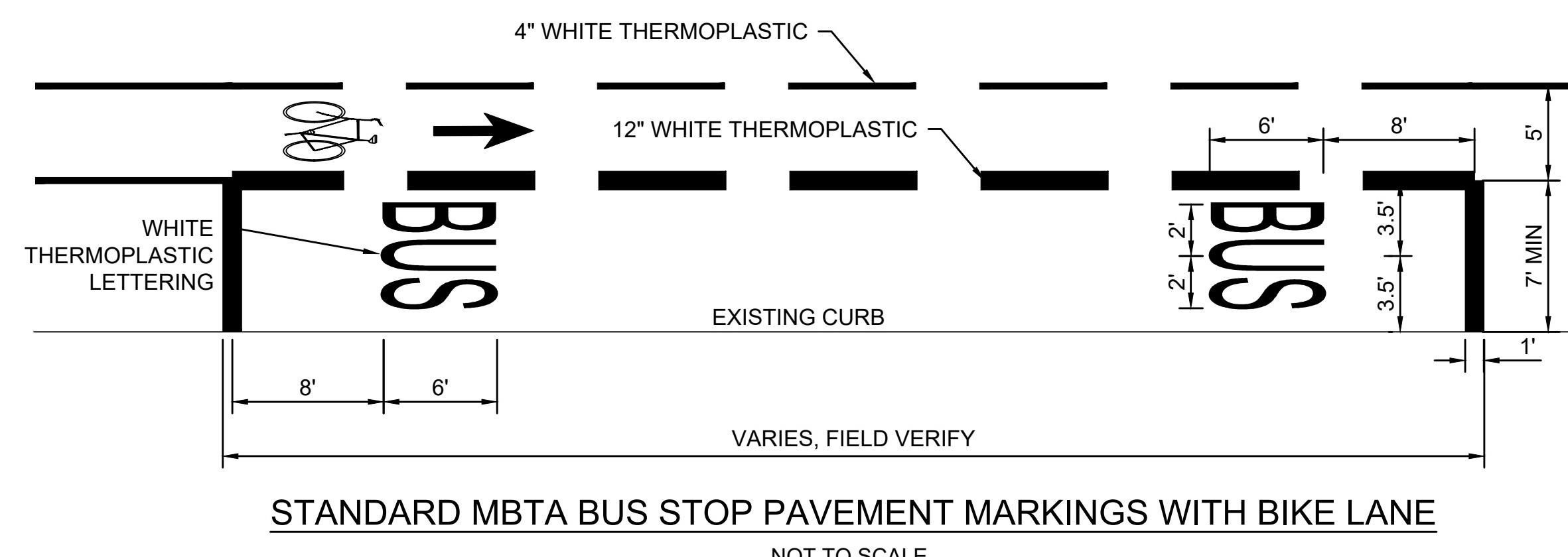


**NOTE:**

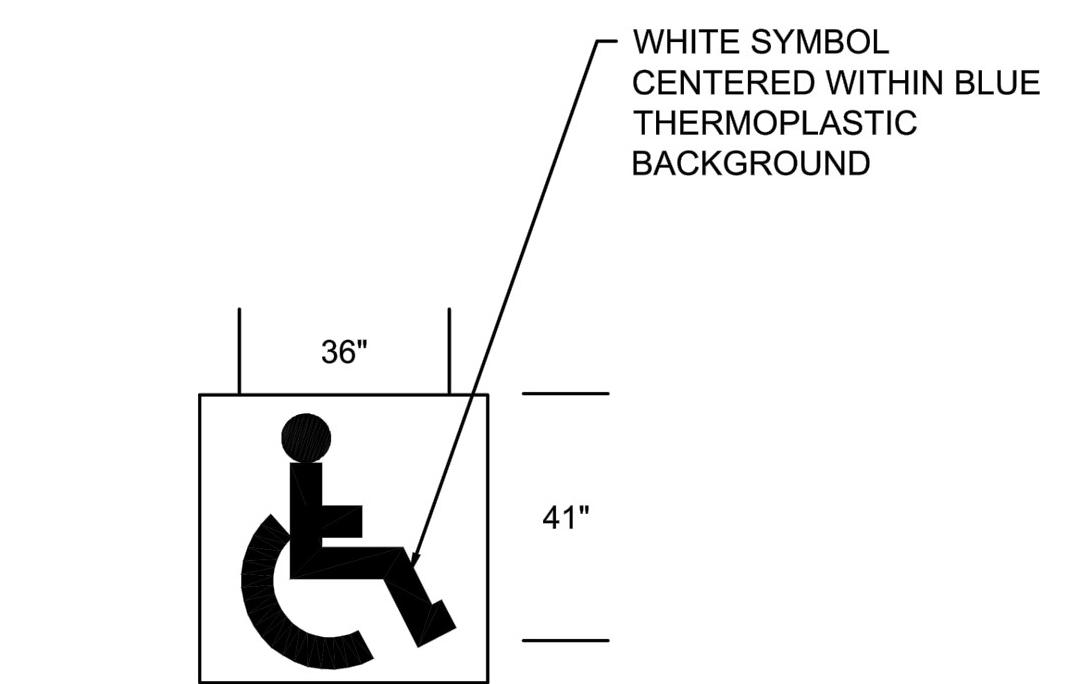
1. ALL POSTS PLACED TO BE ADHESIVE MOUNTED.
2. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH SPECIFICATIONS.
3. POST SHALL HAVE A REACTIVE SPRING UNIT THAT ASSURES THE SIGN WILL RETURN TO ITS ORIGINAL POSITION AFTER IMPACT.



**NOTE:**  
CONTRACTOR SHALL FOLLOW ALL CONSTRUCTION STANDARD DETAILS AS PROVIDED BY THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION DATED OCTOBER 2017 OR NEWER AND THE CITY OF NEWTON CONSTRUCTION STANDARDS UNLESS OTHERWISE PROVIDED OR SPECIFIED WITHIN THE PLAN SET DOCUMENTS.

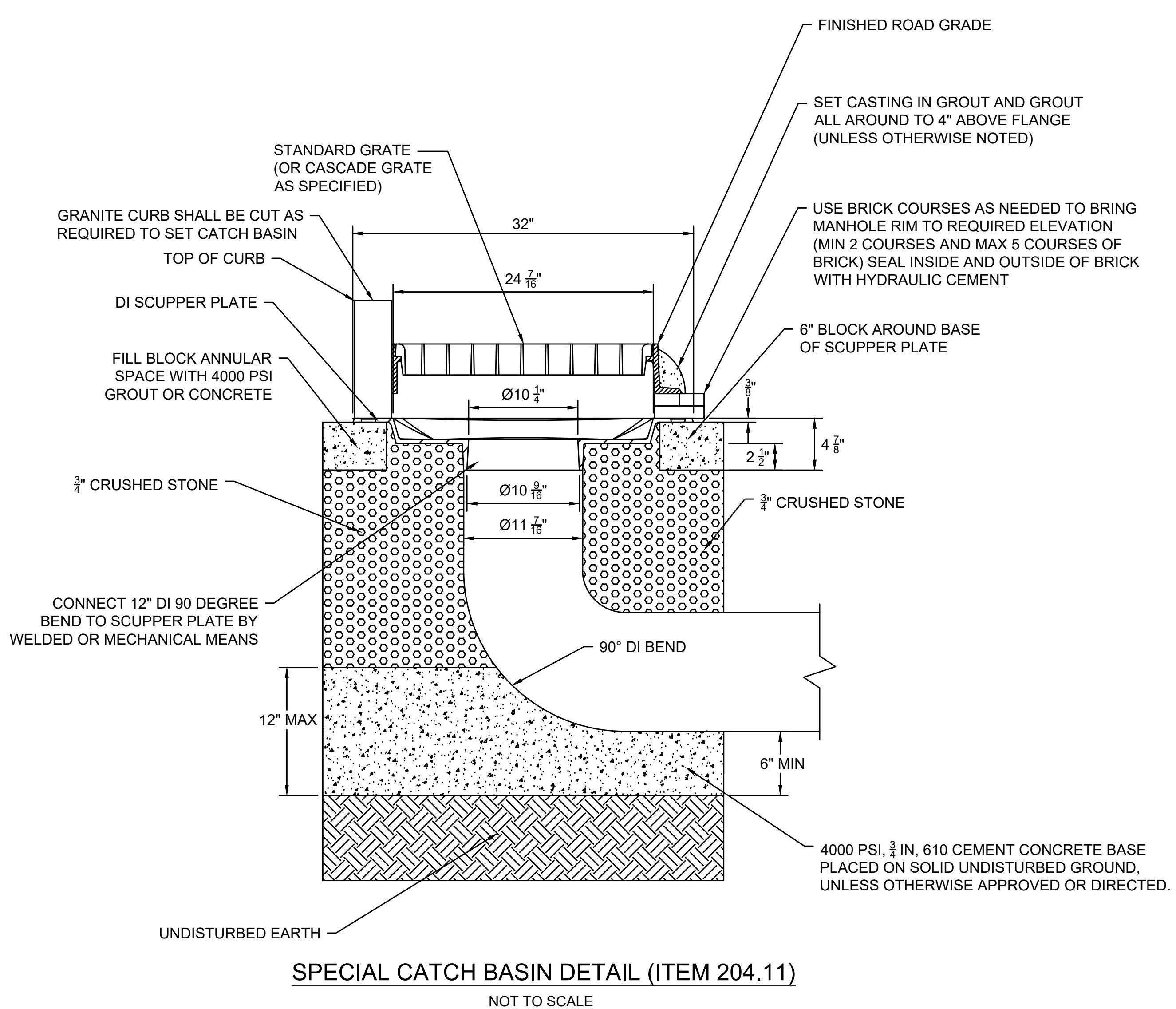


**NOTE:** CONTRACTOR SHALL FIELD VERIFY ROADWAY WIDTHS TO DETERMINE PAVEMENT MARKING LAYOUT FOR VERIFICATION AND APPROVAL BY THE CITY PRIOR TO IMPLEMENTING.



MARK	DATE	DESCRIPTION	Scale	NTS
			Date	AUGUST 2019
			Job No.	R326-1605.00
			Designed by	JRC
			Drawn by	KMB
			Checked by	BLH
			Approved by	JDF

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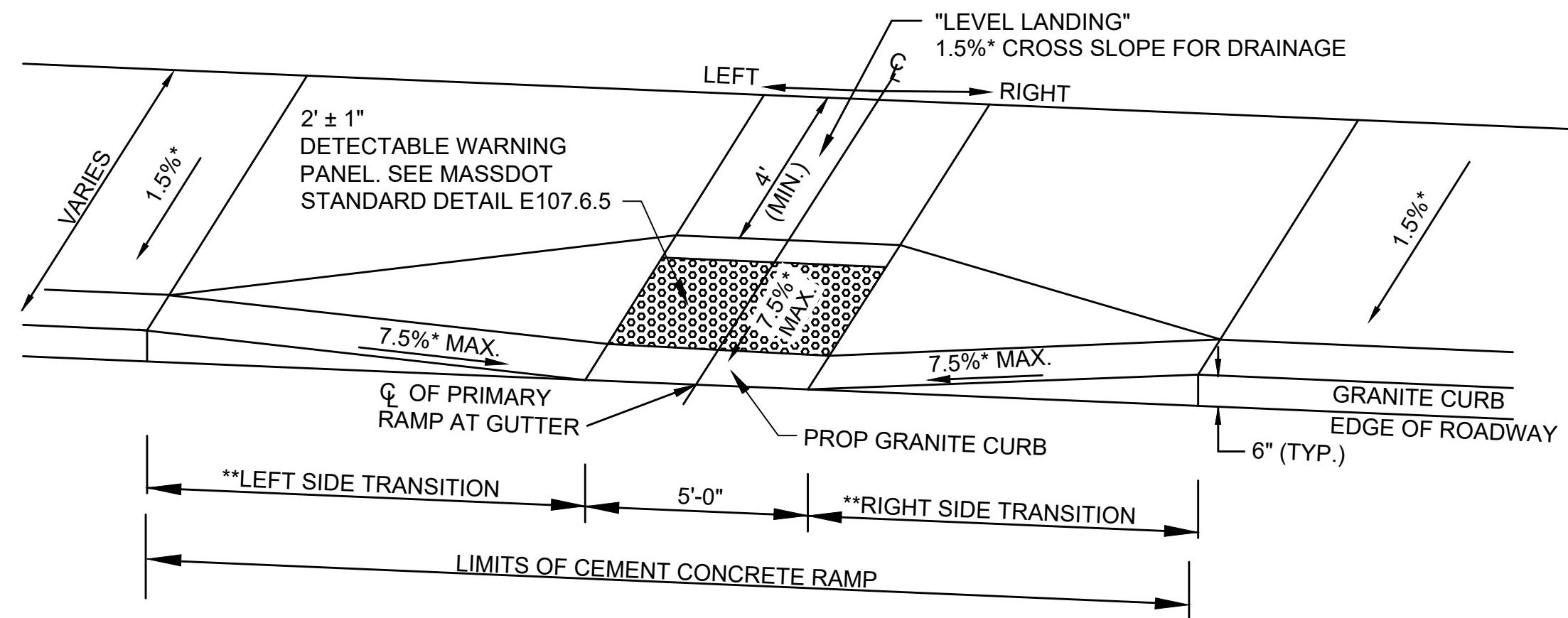


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**REHABILITATION OF WALNUT STREET**  
**NEWTON, MASSACHUSETTS**  
**CONSTRUCTION DETAILS - 03**

Sheet No.  
**11**  
AS NOTED

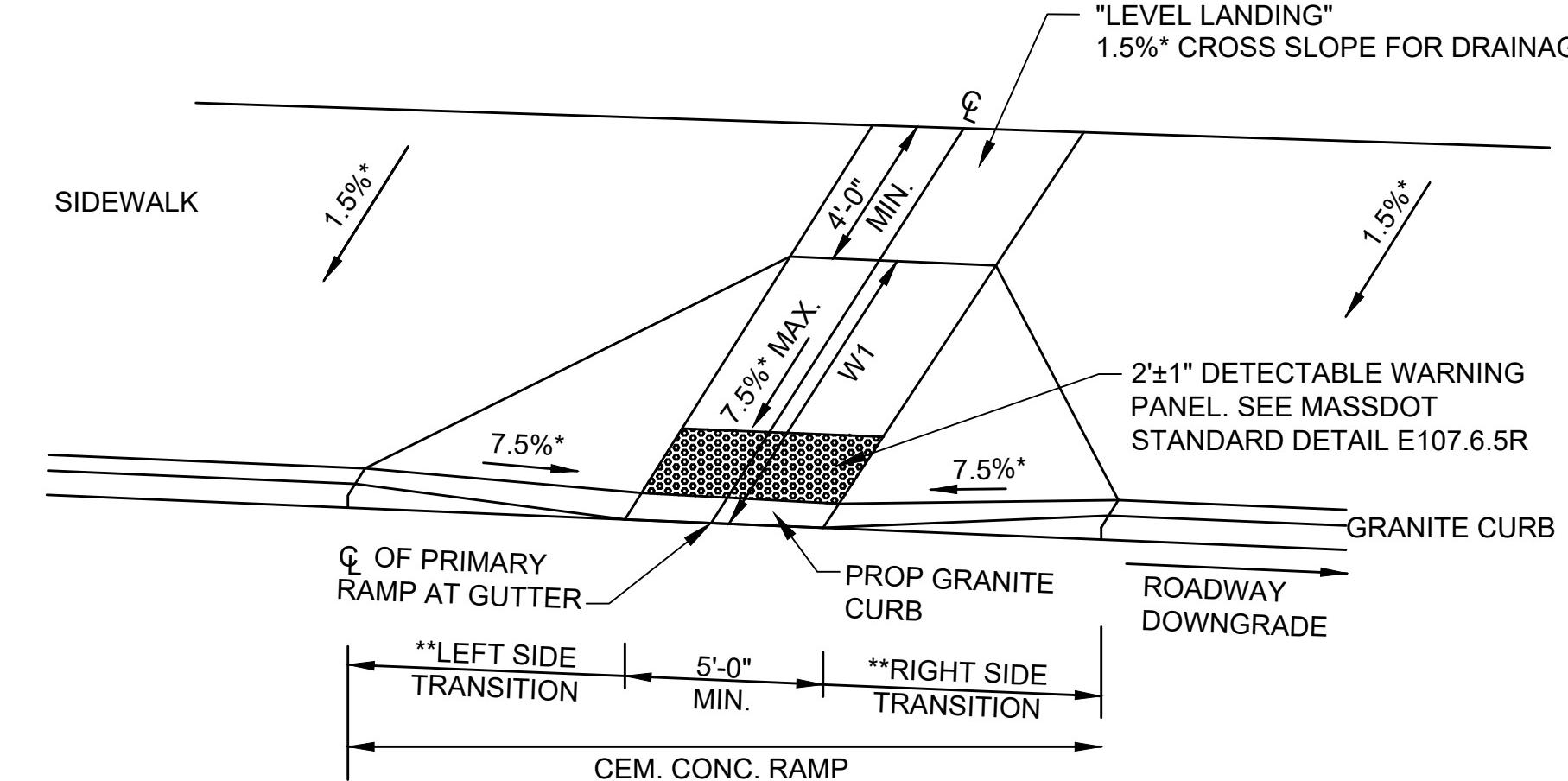


**WHEELCHAIR RAMP (SIDEWALK LESS THAN 12'-4" WIDE)**

NOT TO SCALE

WCR #	ALIGNMENT	RAMP REFERENCE POINT		LENGTH OF PRIMARY RAMP (W <sub>r</sub> )	DEPTH OF LEVEL LANDING (MIN 4.00')	WIDTH OF SIDEWALK	WIDTH OF RAMP (MIN 5.00')	ROADWAY GUTTER SLOPE (%)	TRANSITION LENGTH	
		STATION	OFFSET						LEFT	RIGHT
1	WALNUT STREET	11+42.22'	26.03' LT	3.34'	4.00'	7.34'	5.00'	-0.20%	6.50'	9.00'
5	WALNUT STREET	13+05.42'	15.60' LT	4.18'	4.07'	8.25'	5.00'	0.60%	6.50'	7.67'
6	WALNUT STREET	13+06.60'	17.23' RT	4.20'	4.02'	8.22'	5.00'	0.36%	*3.25'	9.00'
7	CABOT STREET	5+31.34'	14.21' RT	2.94'	4.29'	7.23'	5.00'	0.58%	6.50'	***4.50'
8	CABOT STREET	5+30.95'	14.50' LT	3.89'	4.01'	7.90'	5.00'	-1.40%	***3.84'	6.50'
9	WALNUT STREET	13+67.18'	16.00' LT	4.41'	4.00'	8.41'	5.00'	0.40%	6.50'	7.67'
10	WALNUT STREET	13+69.27'	17.01' RT	4.89'	4.18'	9.07'	5.00'	-1.34%	7.67'	***3.25'
11	OTIS STREET	5+45.16'	17.44' LT	3.09'	4.00'	7.09'	5.00'	-0.59%	7.67'	6.50'
12	OTIS STREET	5+41.48'	19.41' RT	3.24'	4.00'	7.24'	5.00'	1.40%	6.50'	7.67'
13	CLAFLIN PLACE	5+24.80'	9.92' RT	3.25'	4.81'	8.06'	5.00'	-1.04%	11.00'	6.50'
14	CLAFLIN PLACE	5+25.11'	9.97' LT	4.57'	4.32'	8.89'	5.00'	0.23%	6.50'	11.00'
15	WALNUT STREET	16+00.92'	16.00' LT	4.00'	4.00'	8.00'	5.00'	0.66%	6.50'	7.67'
16	WALNUT STREET	16+00.90'	16.00' RT	4.50'	4.00'	8.50'	5.00'	-0.54%	6.50'	9.00'
20	WALNUT STREET	18+17.73'	16.45' RT	4.79'	3.64'	8.43'	5.00'	1.54%	***3.84'	6.50'
21	WASHINGTON PARK	5+28.77'	16.35' RT	4.30**	3.26**	7.56'	5.00'	1.48%	***3.84'	6.50
22	WASHINGTON PARK	5+30.84'	16.44' LT	4.00'	4.13'	8.13'	5.00'	-0.70%	6.50	9.00'
23	WALNUT STREET	19+47.71'	15.00' RT	6.15'	4.01'	10.16'	5.00'	1.61%	6.50'	9.00'
25	HIGHLAND AVENUE	5+35.19'	16.00' LT	4.74'	6.07'	10.81'	5.00'	0.17%	***3.25'	11.00'
26	HIGHLAND AVENUE	5+33.81'	15.85' RT	4.28'	4.77'	9.05'	5.00'	-2.01%	11.00'	6.50'
28	WALNUT STREET	20+13.39'	15.00' RT	7.48'	4.01'	11.49'	5.00'	-0.23%	6.50'	***4.50'
29	MADISON AVENUE	5+32.00'	15.19' RT	5.95'	4.00'	9.95'	5.00'	1.00%	6.50'	7.67'
30	MADISON AVENUE	5+31.73'	14.99' LT	5.59'	4.00'	9.59'	5.00'	-0.39%	***5.50'	6.50'
31	WALNUT STREET	21+68.77'	19.89' RT	5.68'	4.00'	9.68'	5.36'	-0.61%	6.50'	***5.50'
33	WALNUT STREET	23+51.40'	14.00' RT	4.88'	4.00'	8.88'	5.00'	0.31%	9.00'	6.50'
34	AUSTIN STREET	10+28.39'	26.14' LT	4.09'	4.18'	8.27'	5.00'	-1.08%	9.00'	6.50'
35	AUSTIN STREET	10+46.22'	13.35' LT	3.44'	4.33'	7.77'	5.00'	-0.45%	9.00'	6.50'
46	PHILIP BRAM WAY	1+22.76'	12.10' LT	3.39'	4.71'	8.10'	5.00'	0.33%	9.00'	N/A

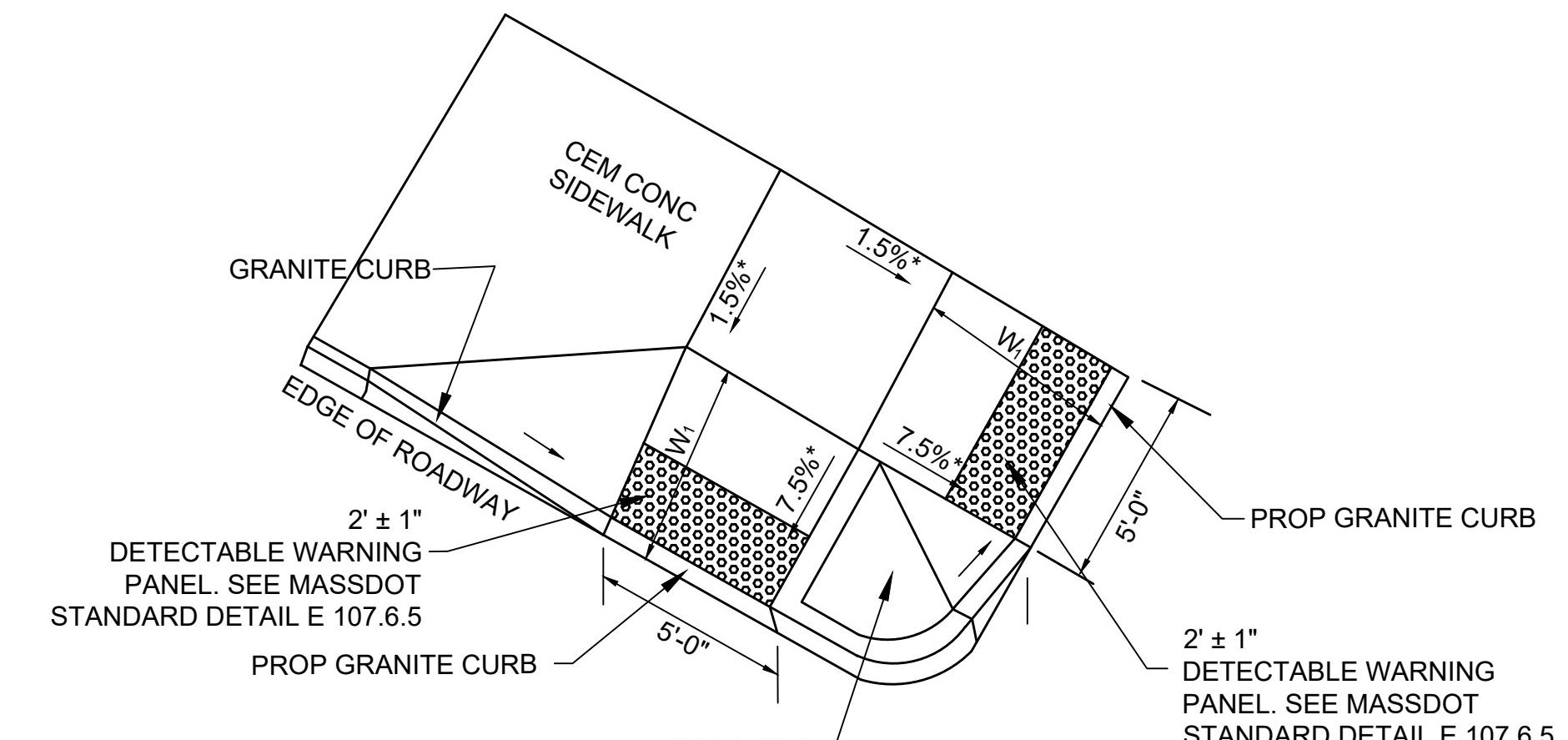
- NOTES:
- SEE CONSTRUCTION STANDARD E107.3.0
  - \* CONSTRUCTION TOLERANCE ±0.5%
  - \*\* TRANSITION CURB LENGTH (FOR HIGH SIDE TRANSITION LENGTH, SEE MASSDOT STANDARD DETAIL E107.9.0. FOR LOW SIDE TRANSITION LENGTH = 6' UNLESS OTHERWISE DEPICTED ON PLAN.)
  - TRANSITION LENGTHS TO BE SET IN THE FIELD BASED ON ACTUAL FIELD CONDITIONS AT THE DIRECTION OF THE CITY AND OR ENGINEER
  - \*\*\* INDICATES 3 INCH CURB REVEAL



**WHEELCHAIR RAMP (SIDEWALK GREATER THAN 12'-4" WIDE)**

NOT TO SCALE

WCR #	ALIGNMENT	RAMP REFERENCE POINT		LENGTH OF RAMP (W <sub>r</sub> )	WIDTH OF RAMP (MIN 5.00')	DEPTH OF LEVEL LANDING (MIN 4.00')	ROADWAY GUTTER SLOPE (±)	TRANSITION LENGTH	
		STATION	OFFSET					LEFT	RIGHT
19	WALNUT STREET	18+19.27'	17.45' LT	7.10'	5.00'	5.07'	-0.34%	***4.66'	8.96'
24	WALNUT STREET	19+56.45'	19.40' LT	8.12'	5.00'	4.45'	-1.53%	6.50'	***5.50'
27	WALNUT STREET	20+13.13'	14.86' LT	10.51'	5.00'	4.10'	0.43%	11.00'	6.50'
32	WALNUT STREET	21+68.90'	14.00' LT	9.72'	5.00'	4.00'	-0.50%	9.00'	6.50'
36	AUSTIN STREET	10+49.05'	28.39' RT	11.76'	5.00'	5.00'	1.75%	6.50'	***7.50'
37	WALNUT STREET	24+20.94'	38.99' LT	7.53'	5.00'	5.00'	2.25%	***3.25'	15.00'
40	WALNUT STREET	24+18.62'	15.23' RT	5.79'	5.00'	12.00'	-1.14%	9.00'	6.50'
41	NEWTONVILLE AVENUE	5+32.94'	22.81' RT	8.07'	5.00'	4.00'	-1.03%	6.50'	6.50'
42	NEWTONVILLE AVENUE	5+31.72'	12.31' LT	9.11'	5.00'	4.00'	-3.91%	14.00'	6.50'
43	HIGHLAND AVENUE	6+35.07'	12.02' LT	8.15'	5.00'	5.00'	0.69%	6.50'	9.00'
44	HIGHLAND AVENUE	6+34.51'	12.15' RT	7.93'	5.00'	4.00'	-0.95%	***3.25'	N/A
45	PHILIP BRAM WAY	1+23.20'	13.13' RT	2.67'	5.00'	3.79'	-1.03%	7.67'	***3.25'
50	AUSTIN STREET	14+04.53'	17.96' RT	7.00'	5.00'	4.00'	-0.66%	N/A	7.67'
51	AUSTIN STREET	14+28.99'	17.26' RT	7.00'	5.00'	4.00'	-0.58%	6.50'	N/A

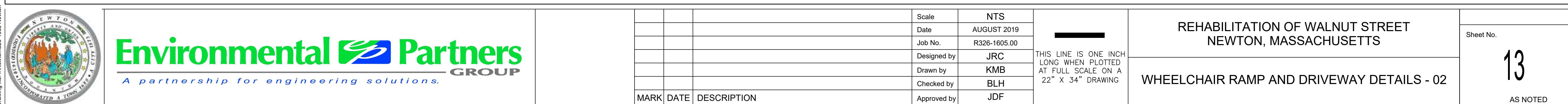
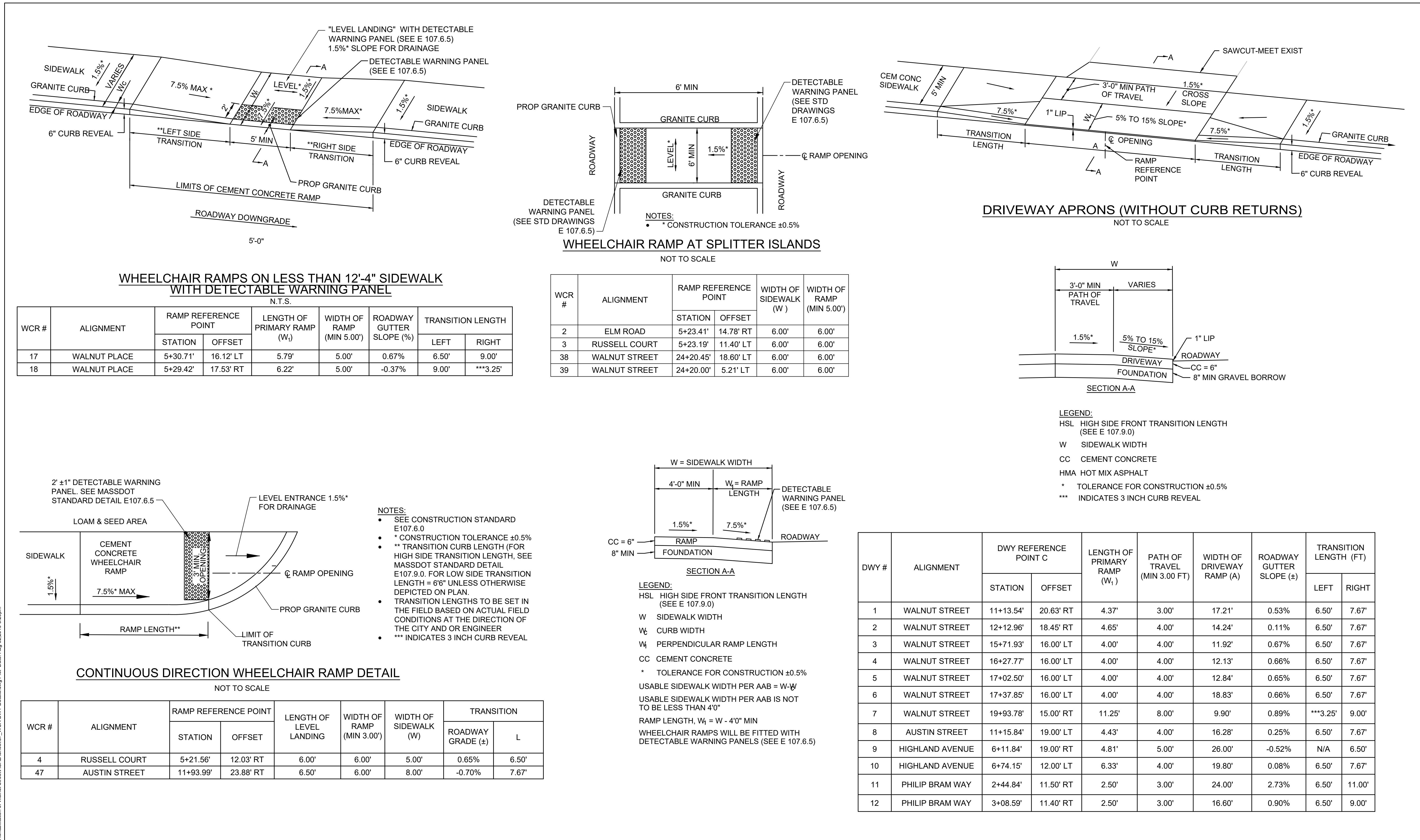


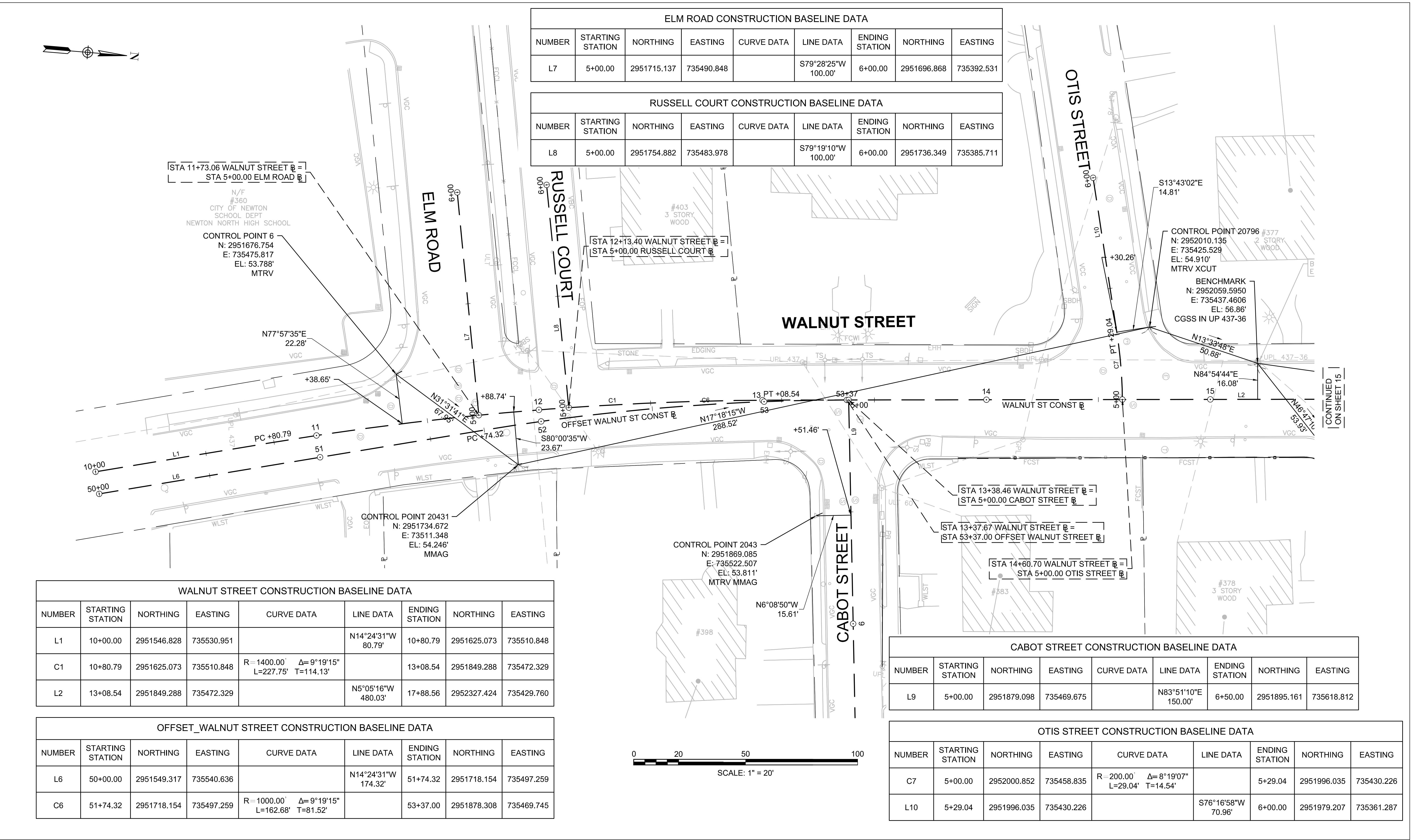
**WHEELCHAIR RAMP WITH SHARED LEVEL LANDING**

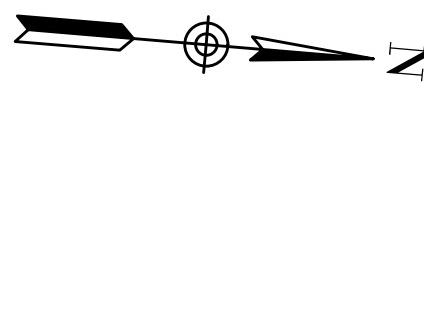
NOT TO SCALE

WCR #	ALIGNMENT	RAMP REFERENCE POINT		LENGTH OF RAMP (W <sub>r</sub> )	WIDTH OF RAMP (MIN 5.00')	DEPTH OF LEVEL LANDING (MIN 4.00')	ROADWAY GUTTER SLOPE (±)	TRANSITION LENGTH	
		STATION	OFFSET					LEFT	RIGHT
48	AUSTIN STREET	12+18.42'	23.87' RT	6.68'	6.00'	5.00'	2.00%	***3.25'	N/A
49	AUSTIN STREET	12+27.44'	12.05' RT	8.65'	5.00'	5.85'	-0.70%	9.00'	N/A









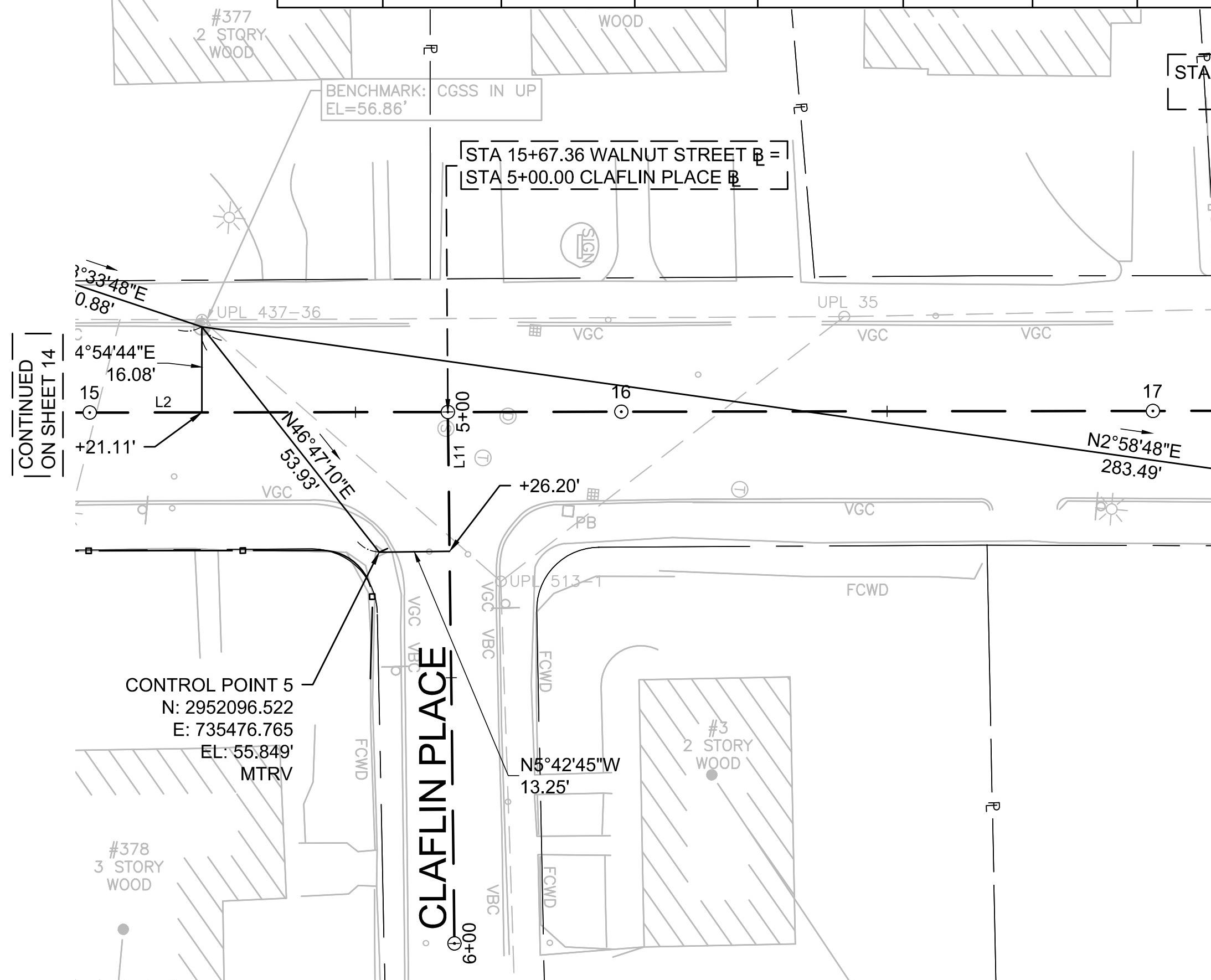
WALNUT STREET CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L2	13+08.54	2951849.288	735472.329		N5°05'16"W 480.03'	17+88.56	2952327.424	735429.760
C2	17+88.56	2952327.424	735429.760	R=1500.00' Δ=2°29'29" L=65.22' T=32.62'		18+53.79	2952392.244	735422.565
L3	18+53.79	2952392.244	735422.565		N7°34'45"W 75.36'	19+29.14	2952466.944	735412.626
C3	19+29.14	2952466.944	735412.626	R=1500.00' Δ=3°44'19" L=97.88' T=48.96'		20+27.02	2952564.318	735402.890
L4	20+27.02	2952564.318	735402.890		N3°50'25"W 195.48'	22+22.50	2952759.355	735389.798

CLAFLIN PLACE CONSTRUCTION BASELINE DATA

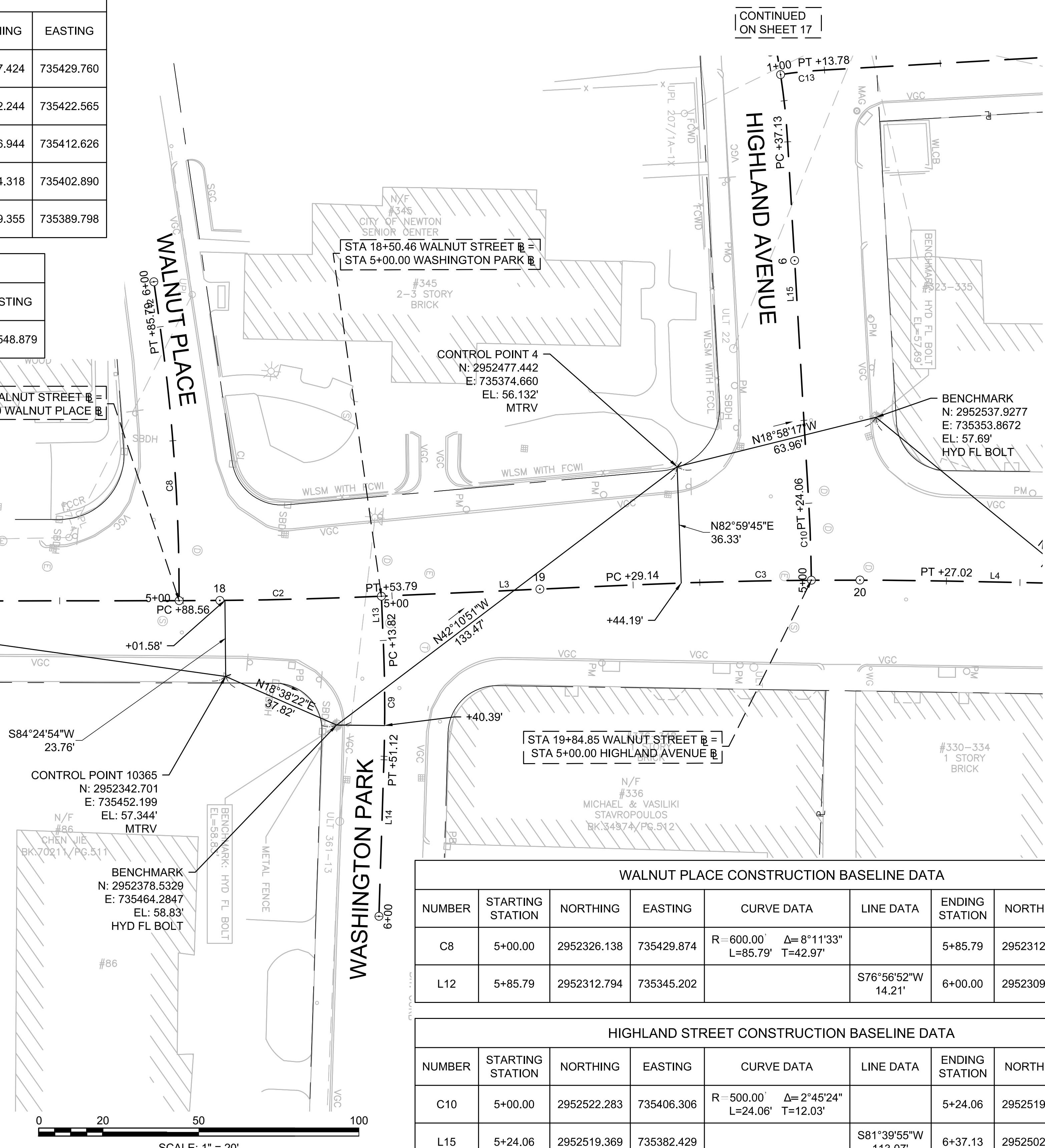
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L11	5+00.00	2952107.094	735449.376		N84°17'15"E 100.00'	6+00.00	2952117.048	735548.879

CONTINUED  
ON NEXT PAGE



WASHINGTON PARK CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L13	5+00.00	2952388.943	735423.001		N82°32'53"E 13.82'	5+13.82	2952390.736	735436.700
C9	5+13.82	2952390.736	735436.708	R=500.00' Δ=4°16'25" L=37.29' T=18.66'		5+51.12	2952394.190	735473.830
L14	5+51.12	2952394.190	735473.833		N86°49'18"E 48.88'	6+00.00	2952396.900	735522.640



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WALNUT PLACE CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
C8	5+00.00	2952326.138	735429.874	R=600.00' Δ=8°11'33" L=85.79' T=42.97'		5+85.79	2952312.794	735345.202
L12	5+85.79	2952312.794	735345.202		S76°56'52"W 14.21'	6+00.00	2952309.585	735331.360

HIGHLAND STREET CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
C10	5+00.00	2952522.283	735406.306	R=500.00' Δ=2°45'24" L=24.06' T=12.03'		5+24.06	2952519.369	735382.429
L15	5+24.06	2952519.369	735382.429		S81°39'55"W 113.07'	6+37.13	2952502.978	735270.550



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The seal of the Commonwealth of Massachusetts, featuring a central shield with a Native American figure holding a bow and arrow, surrounded by a circular border with the words "SIGILLUM REIPUBLICÆ MASSACHUSETTENSIS" and "1780".

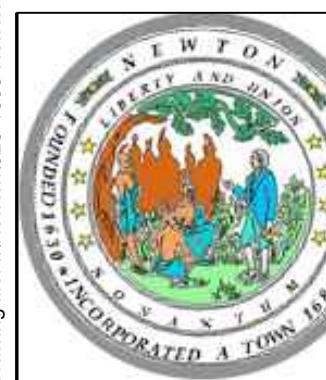
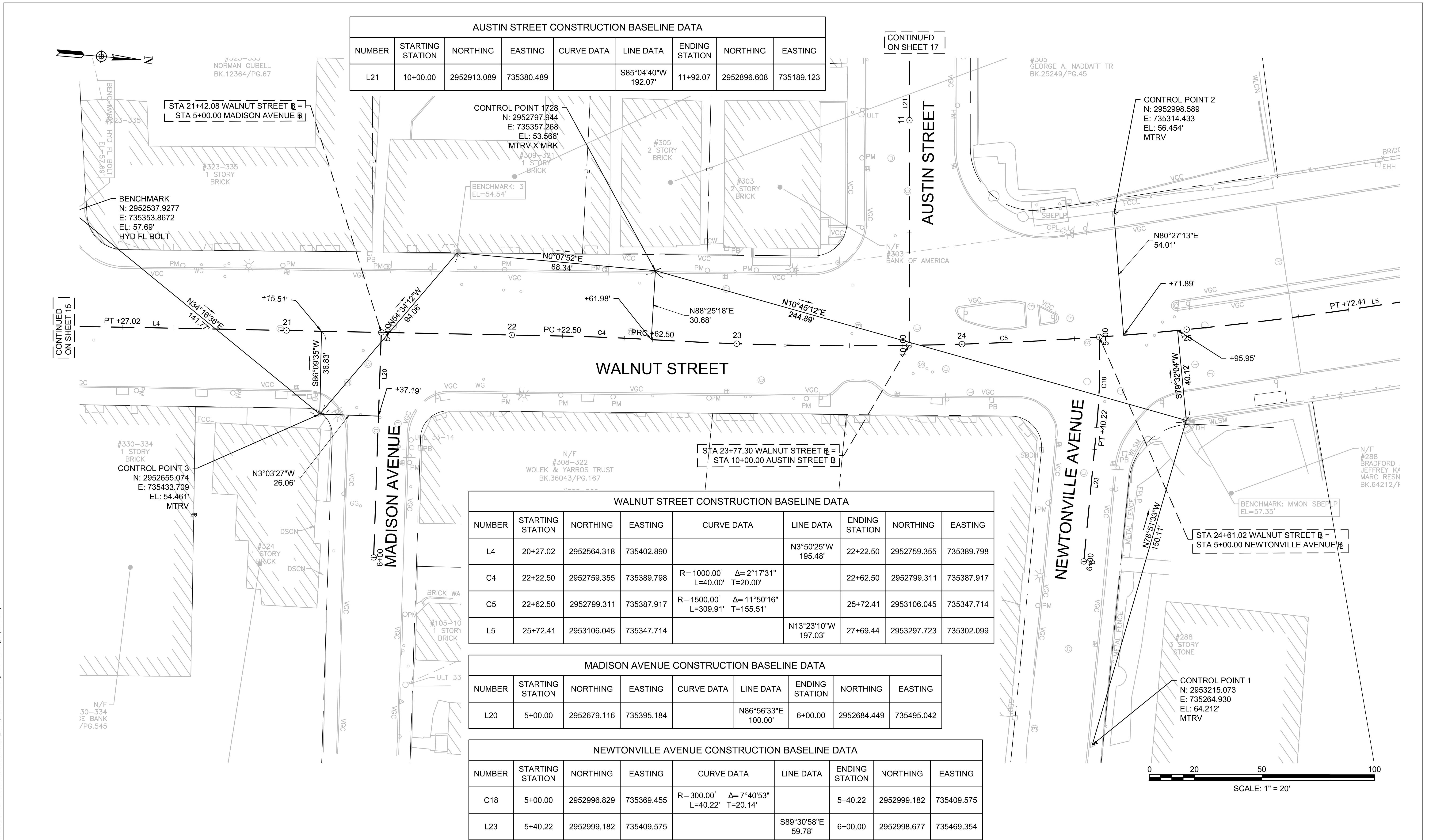
			Scale
			Date
			Job No.
			Designed by
			Drawn by
			Checked by
MARK	DATE	DESCRIPTION	Approved by

# REHABILITATION OF WALNUT STREET NEWTON, MASSACHUSETTS

Sheet No.

15

AS NOT



# Environmental Partners GROUP

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			Scale	AS NOTED	
			Date	AUGUST 2019	
			Job No.	R326-1605.00	
			Designed by	JRC	
			Drawn by	KMB	
			Checked by	BLH	
MARK	DATE	DESCRIPTION	Approved by	JDF	

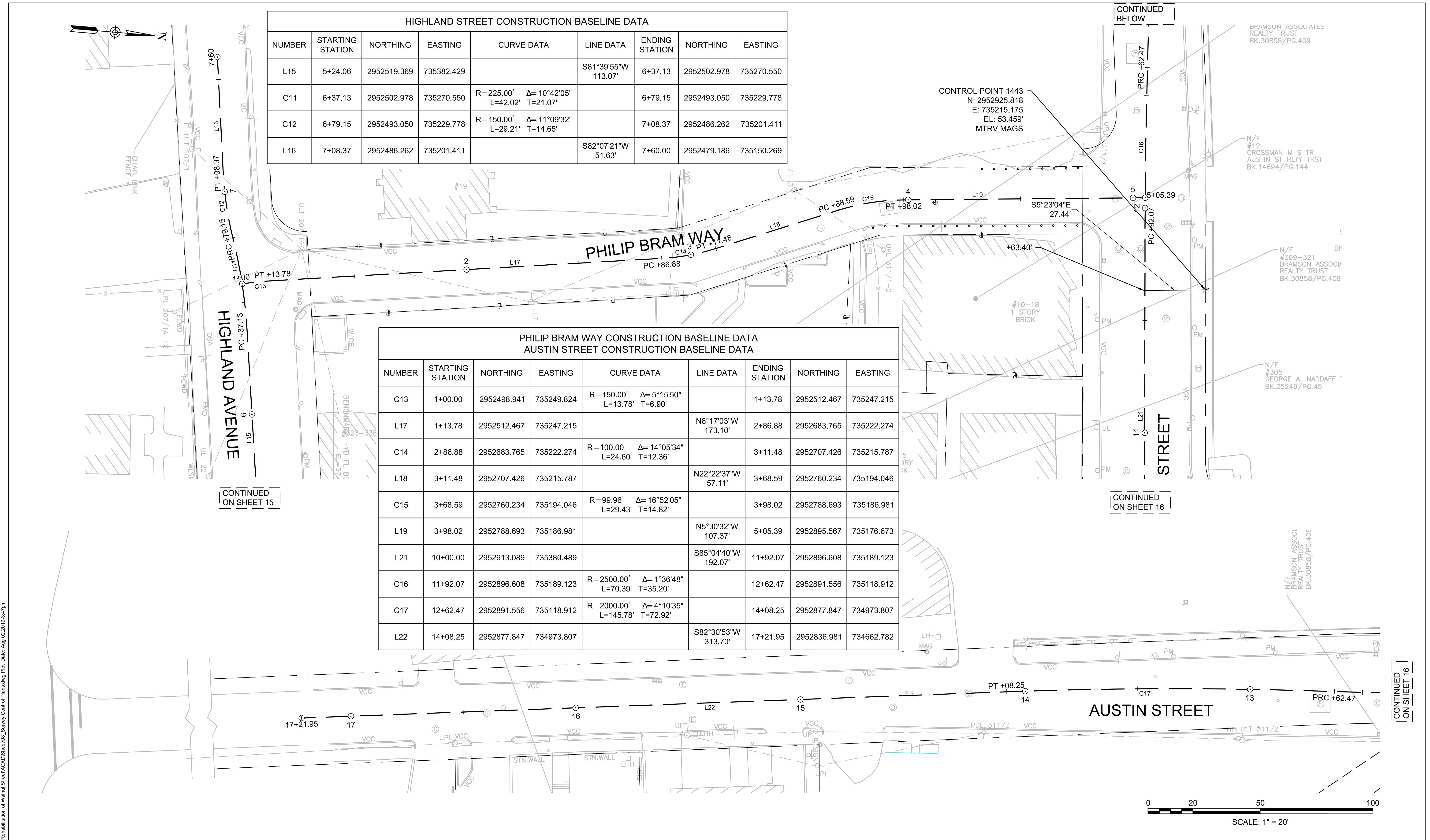
# REHABILITATION OF WALNUT STREET NEWTON, MASSACHUSETTS

## SURVEY CONTROL PLAN - 03

Sheet No.

16

AS NOTED



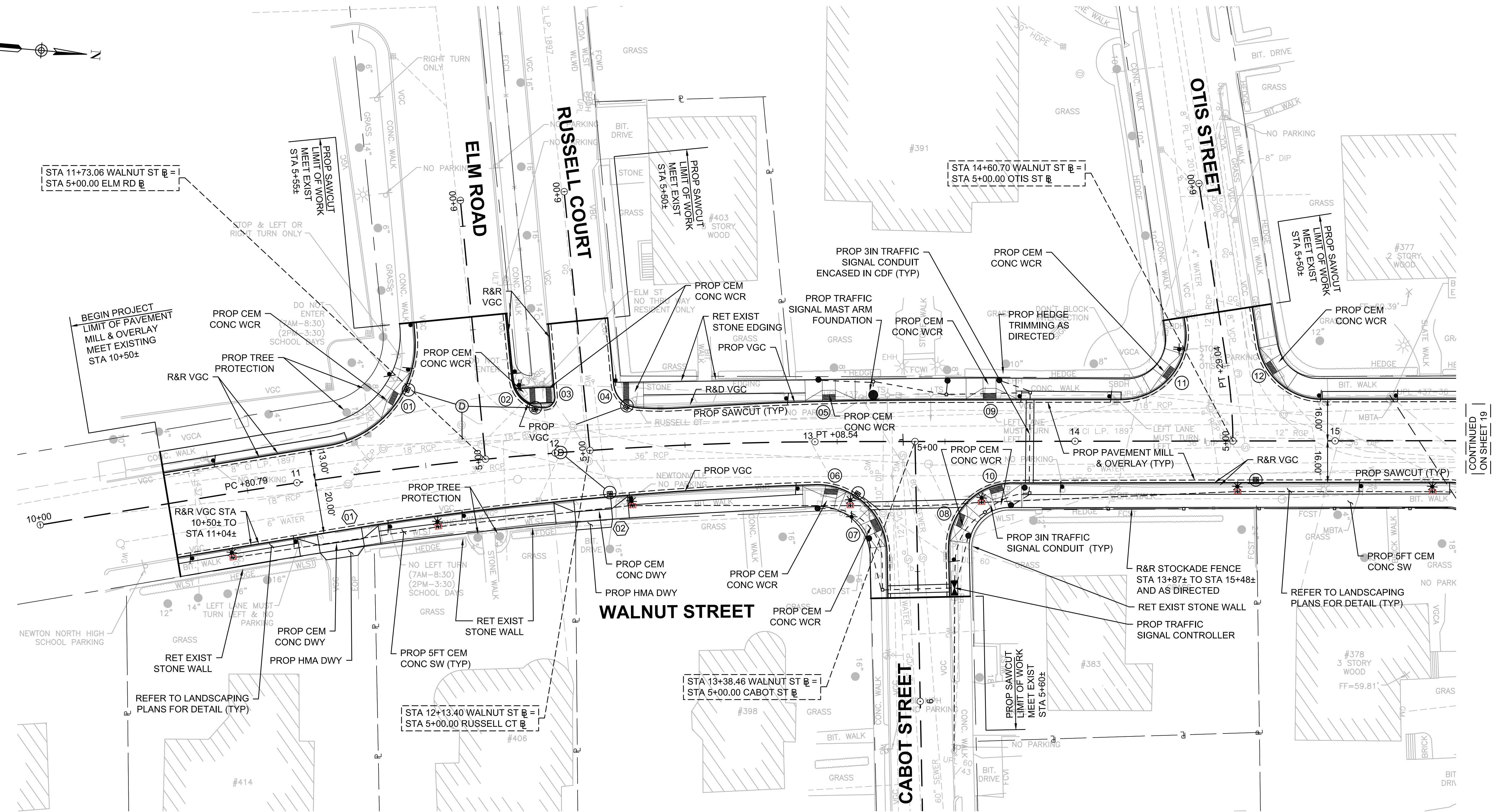
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MARK	DATE	DESCRIPTION	Scale	AS NOTED
			Date	AUGUST 2019
			Job No.	R326-1605.00
			Designed by	JRC
			Drawn by	KMB
			Checked by	BLH
			Approved by	JDF

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REHABILITATION OF WALNUT STREET  
NEWTON, MASSACHUSETTS  
SURVEY CONTROL PLAN - 04

Sheet No.  
**17**  
AS NOTED



NOTES:

1. REMOVE AND STACK ALL EXISTING STRAIGHT VERTICAL GRANITE CURB UNLESS OTHERWISE NOTED AND AS DIRECTED BY THE CITY.
2. REMOVE AND STACK ALL EXISTING CURVED VERTICAL GRANITE CURB UNLESS OTHERWISE NOTED AND AS DIRECTED BY THE CITY.
3. CONTRACTOR SHALL TEST PIT ALL POTENTIAL UTILITY CONFLICTS WITH THE PROPOSED DESIGN AND AS NOTED PRIOR TO ORDERING AND STOCK PILING ANY MATERIAL INCLUDING BUT NOT LIMITED TO DRAINAGE STRUCTURES, DRAINAGE PIPE, TRAFFIC SIGNAL EQUIPMENT, AND ANY OTHER EQUIPMENT AS DIRECTED.
4. PROPOSED BACK OF SIDEWALK SHALL MEET ALL EXISTING DOOR SILLS/OPENINGS. ANY DISCREPANCIES OR CONFLICT SHALL BE IMMEDIATELY REPORTED TO THE CITY AND OR ENGINEER FOR RESOLUTION PRIOR TO CONTINUING WORK.

FOR PROFILE SEE SHEET 22 & 25  
FOR LANDSCAPING PLAN SEE SHEET 59  
FOR LIGHTING PLAN SEE SHEET 74

LEGEND	
(#)	WHEELCHAIR RAMP NUMBER
(#)	DRIVEWAY NUMBER

0 20 50 100  
SCALE: 1" = 20'



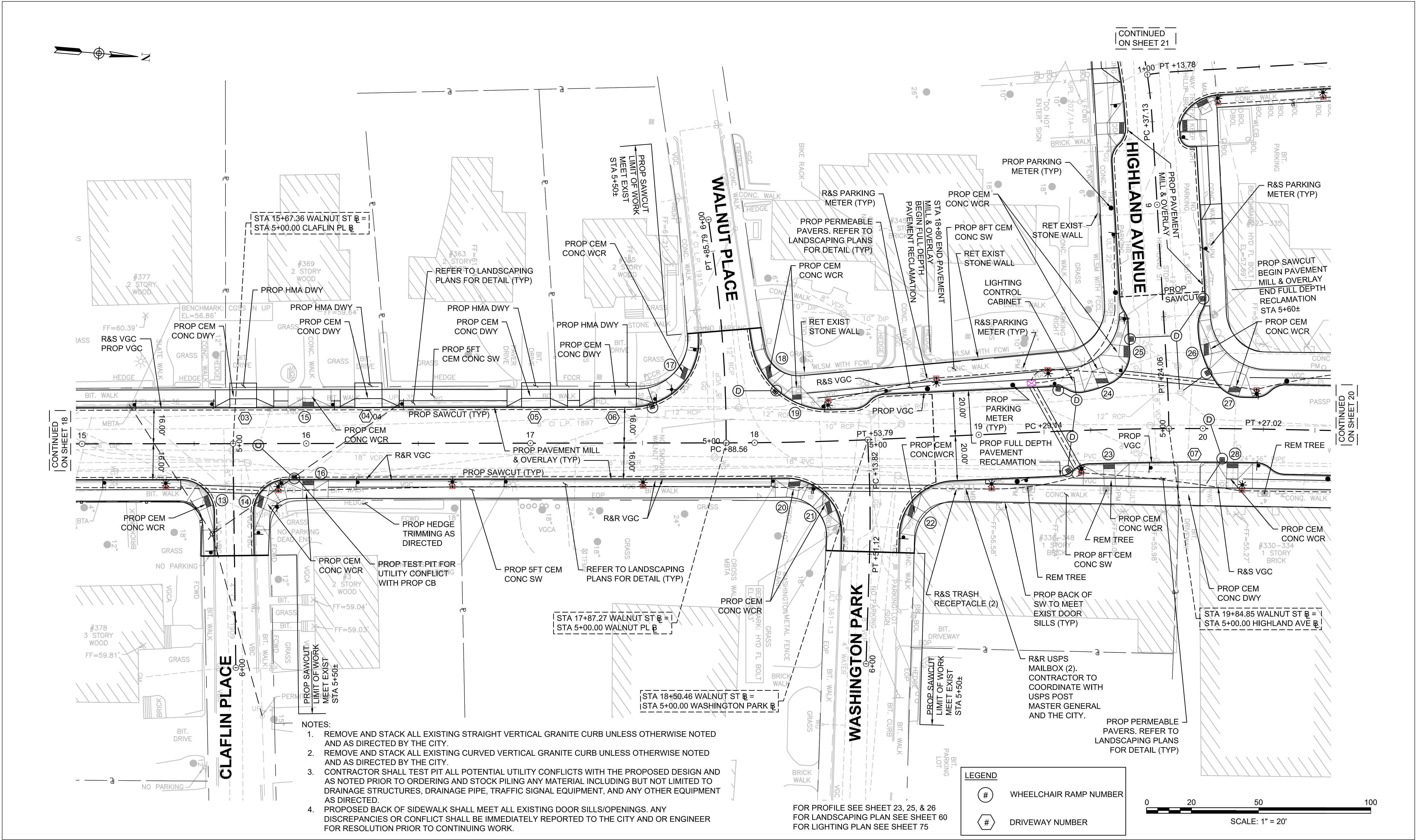
**Environmental Partners**  
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MARK	DATE	DESCRIPTION	Scale	AS NOTED
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REHABILITATION OF WALNUT STREET  
NEWTON, MASSACHUSETTS  
CONSTRUCTION PLAN - 01

Sheet No. 18  
AS NOTED



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MARK	DATE	DESCRIPTION

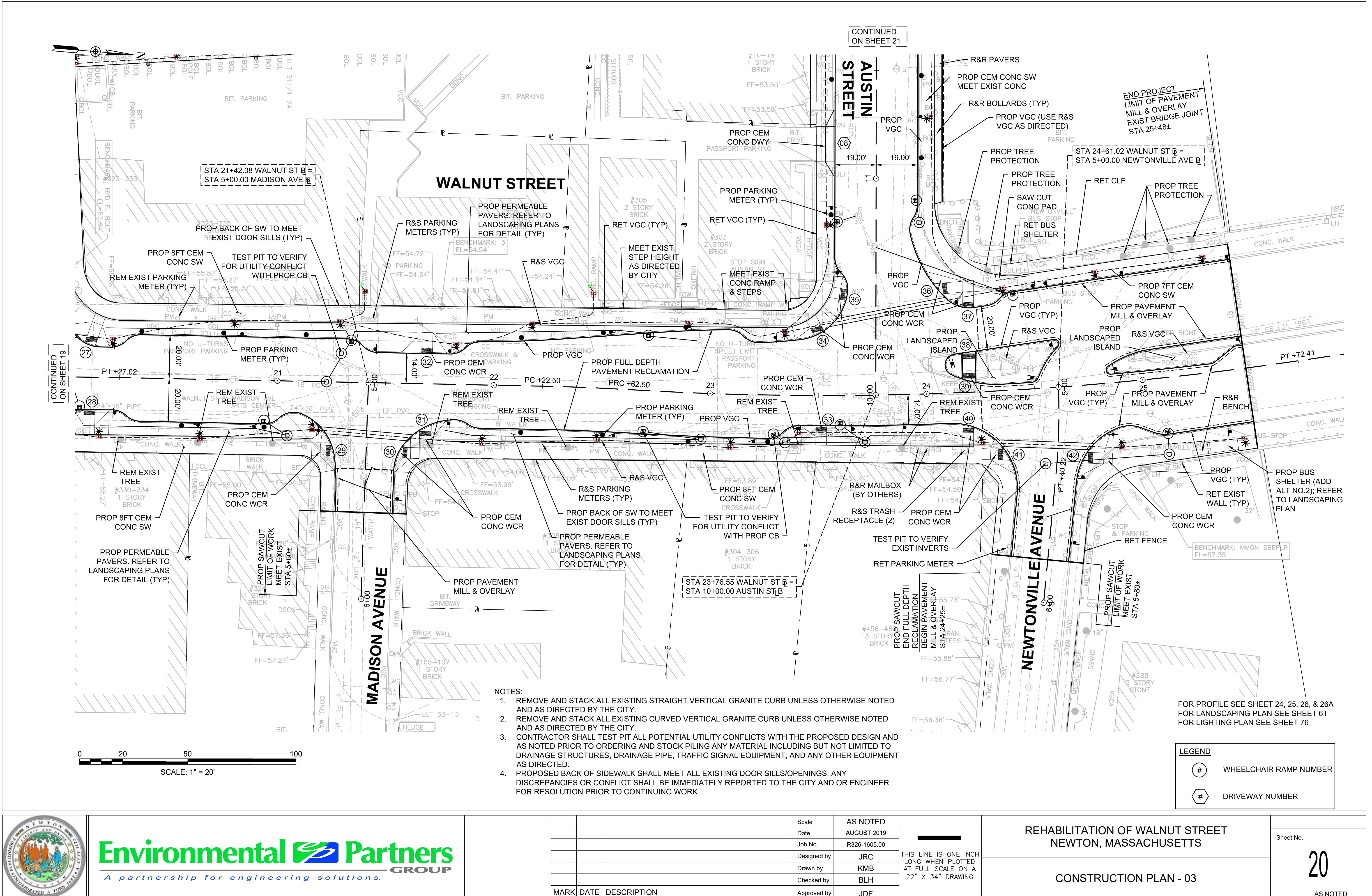
**REHABILITATION OF WALNUT STREET  
NEWTON, MASSACHUSETTS**

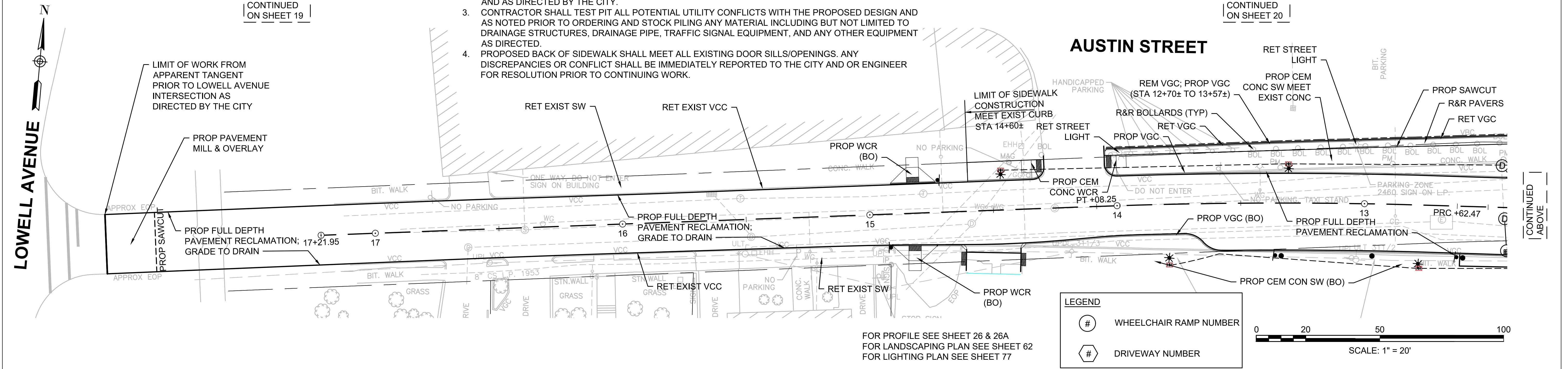
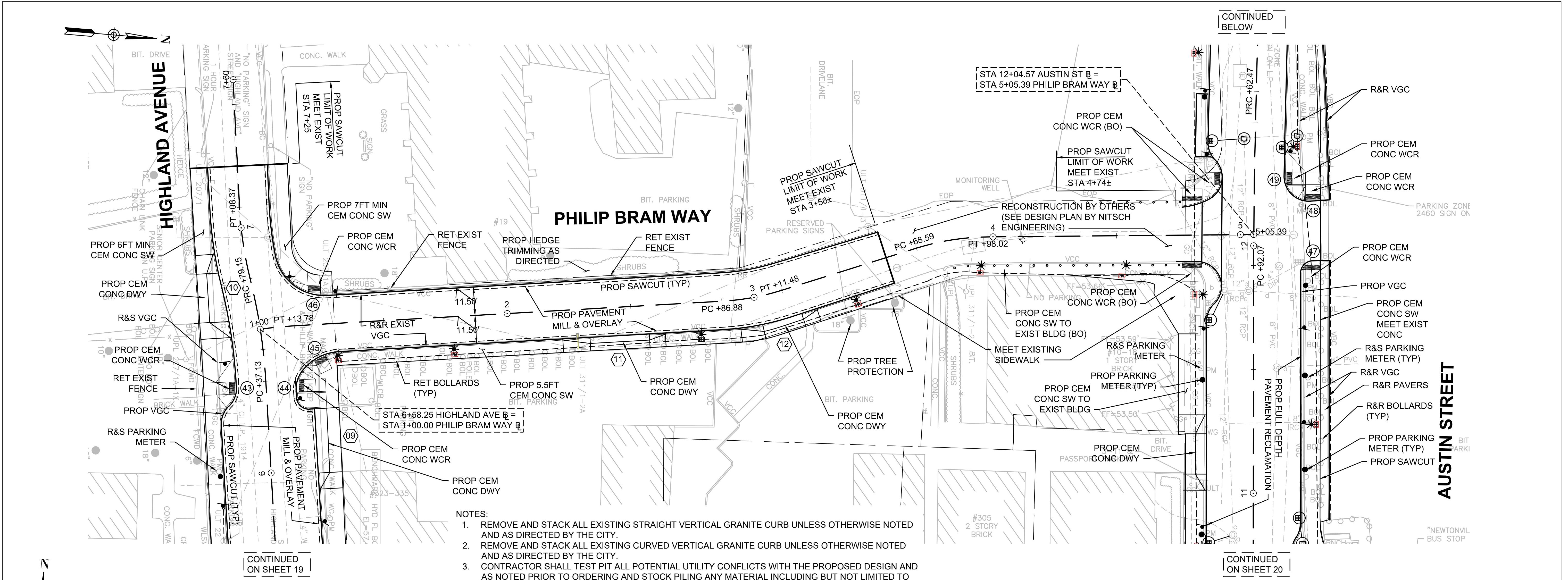
**CONSTRUCTION PLAN - 02**

Sheet No.

**19**

AS NOTED





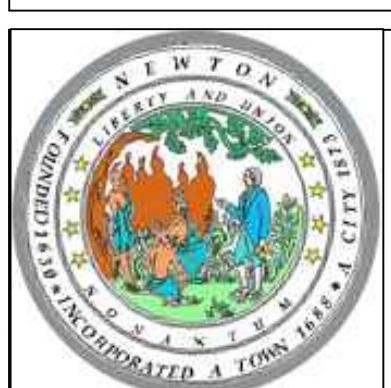
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			Job No.	R326-1605.00
			Designed by	JRC
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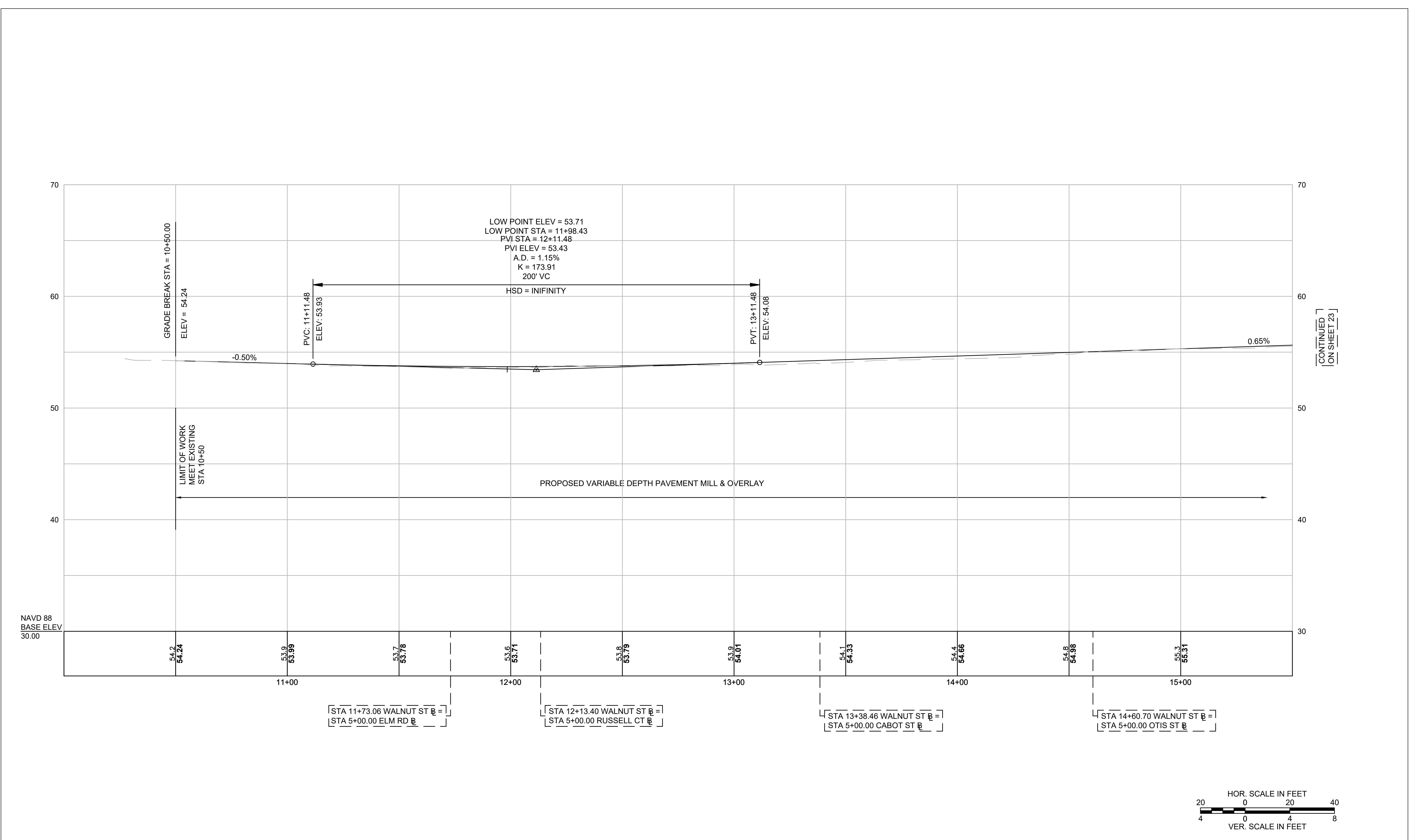
**REHABILITATION OF WALNUT STREET  
NEWTON, MASSACHUSETTS**

**CONSTRUCTION PLAN - 04**

Sheet No. 21 AS NOTED



**Environmental Partners**  
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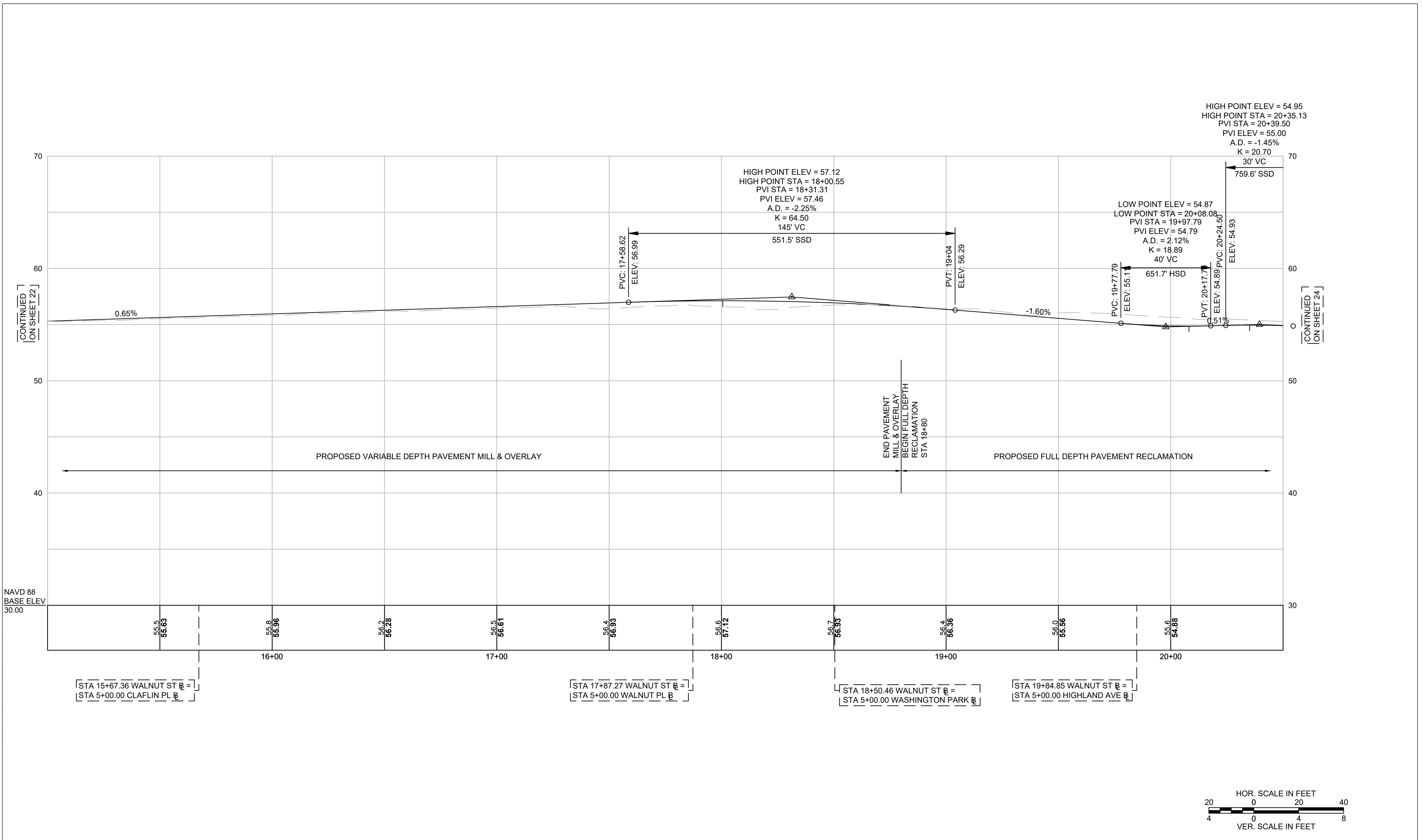
**Environmental**  **Partners**  
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Date	AUGUST 2019
Job No.	R326-1605.00
Designed by	JRC
Drawn by	JRC
Checked by	BLH
Approved by	JDF

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22" X 34" DRAWING

REHABILITATION OF WALNUT STREET  
NEWTON, MASSACHUSETTS  
PROFILE - WALNUT STREET - 01

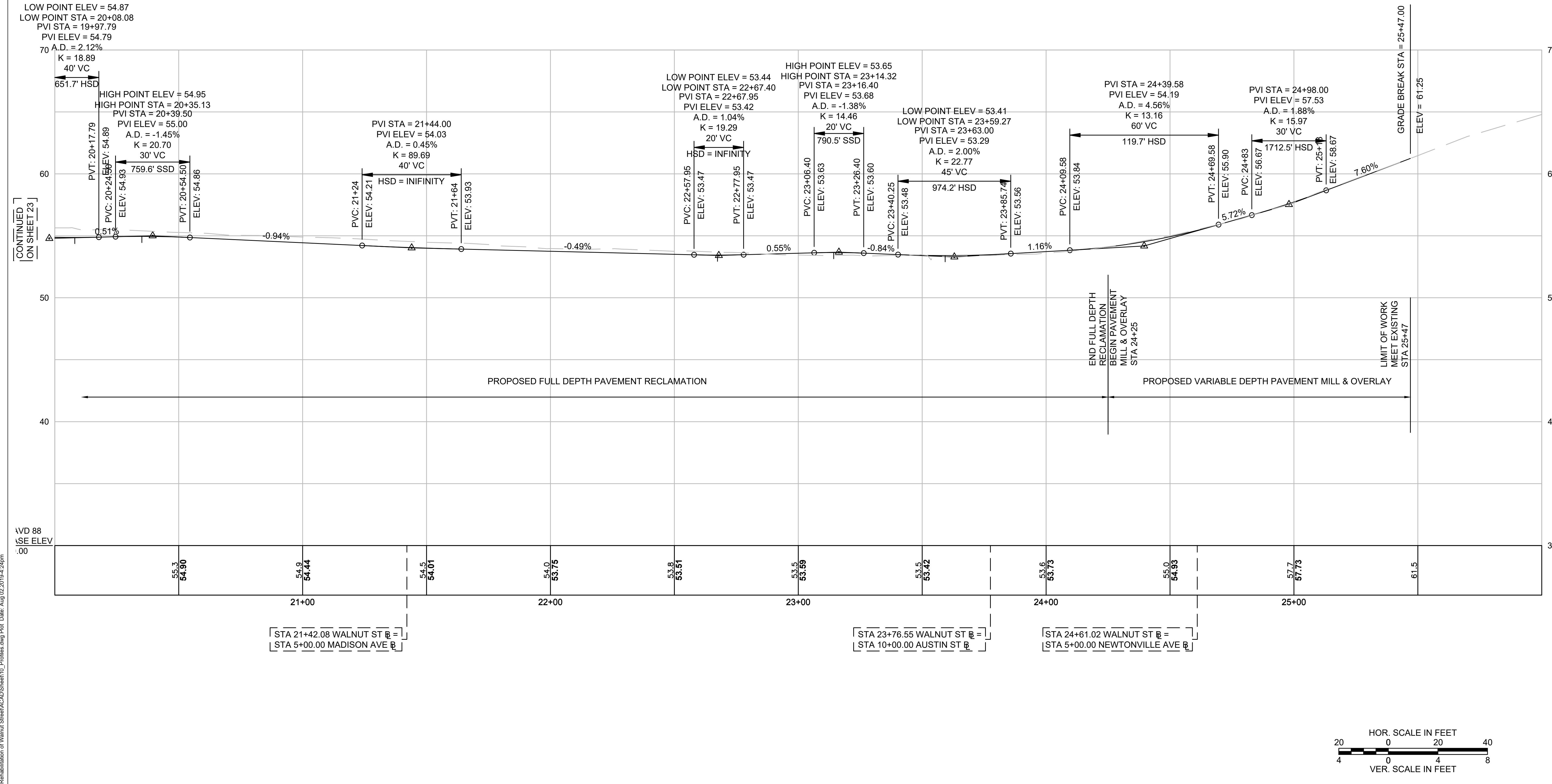
Sheet No.  
**22**  
AS NOTED



Scale	AS NOTED
Date	AUGUST 2019
Job No.	R326-1605.00
Designed by	JRC
Drawn by	JRC
Checked by	BLH
Approved by	JDF

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REHABILITATION OF WALNUT STREET  
NEWTON, MASSACHUSETTS  
PROFILE - WALNUT STREET - 02



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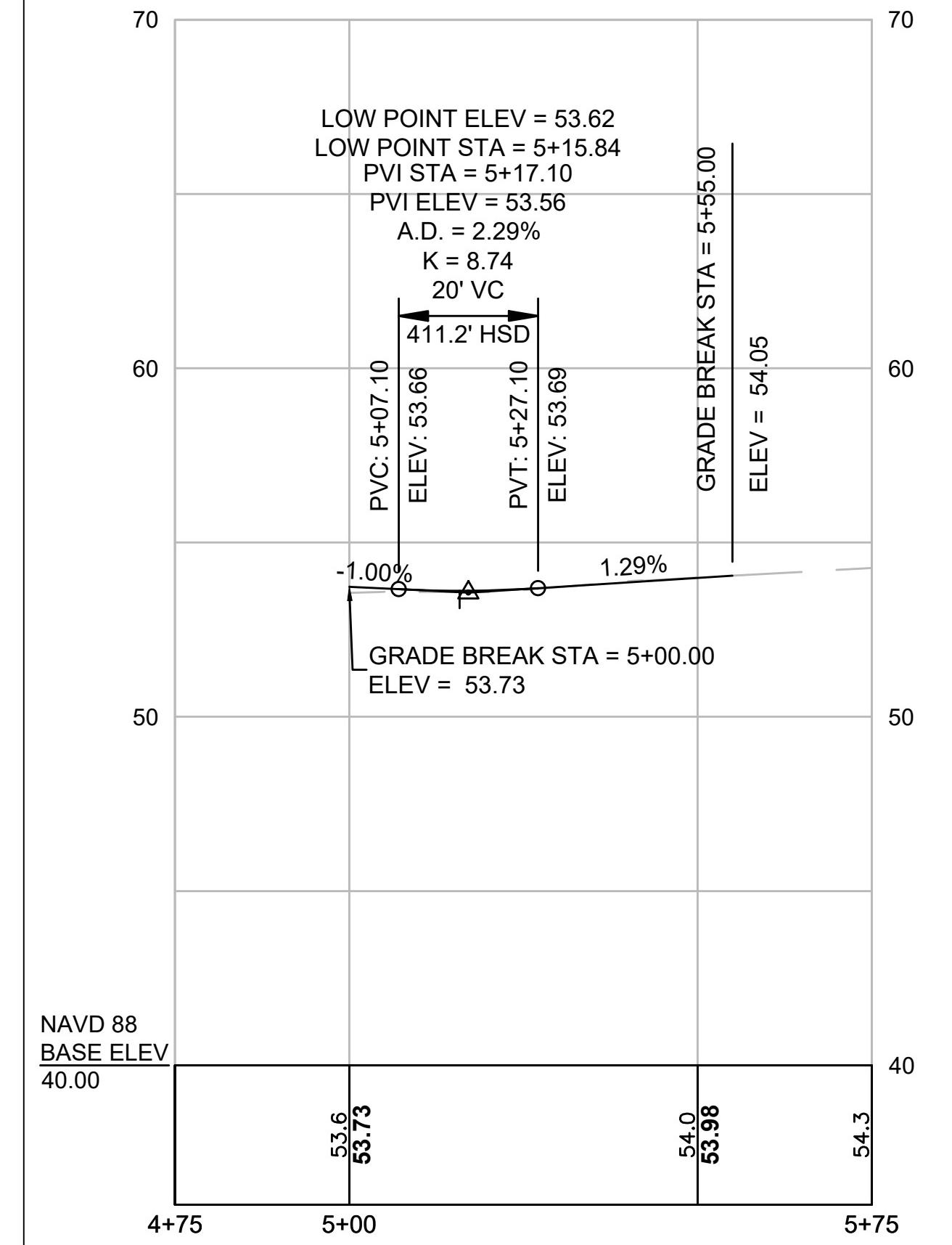
Scale	AS NOTED
Date	AUGUST 2019
Job No.	R326-1605.00
Designed by	JRC
Drawn by	JRC
Checked by	BLH
Approved by	JDF

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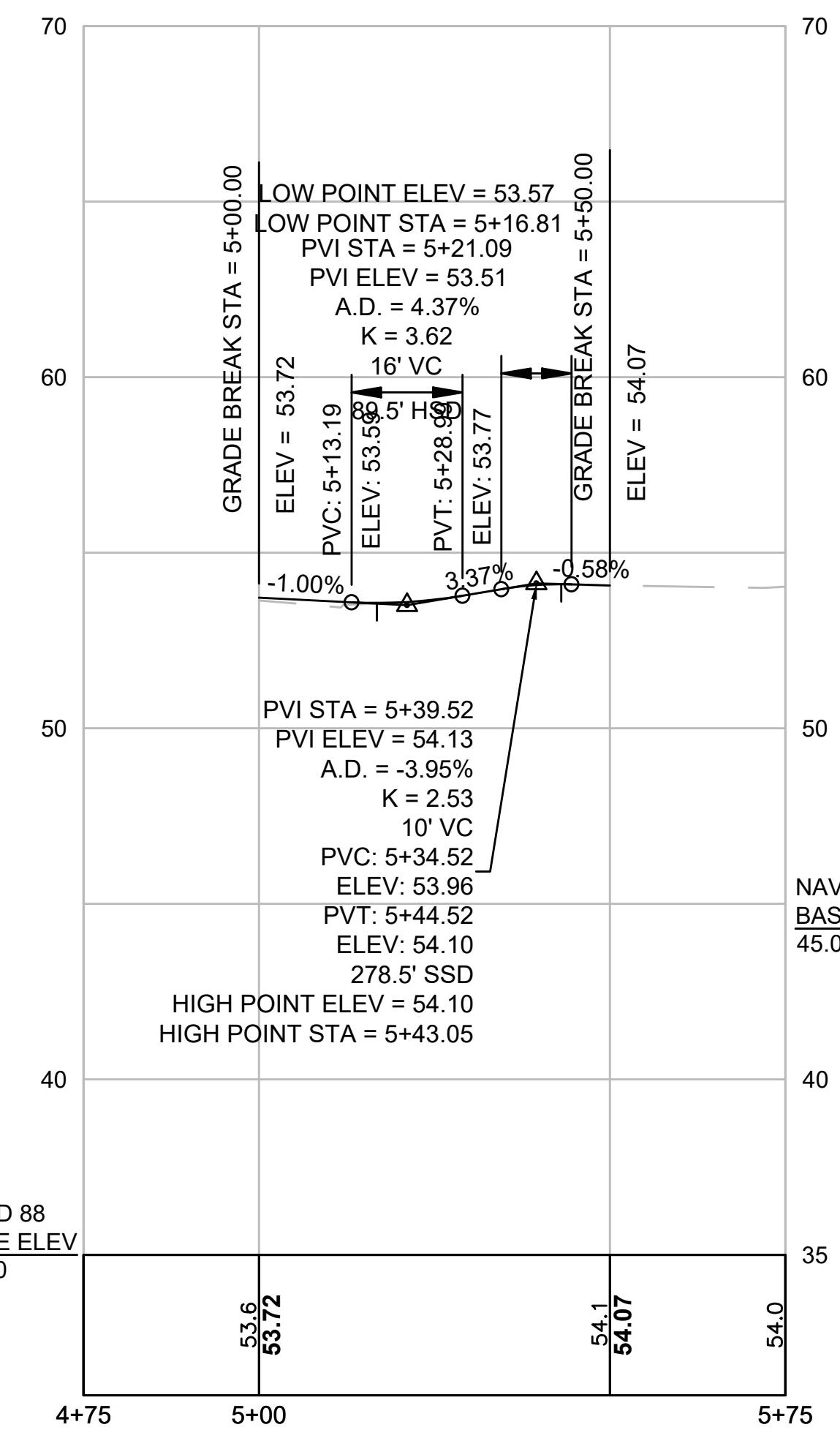
REHABILITATION OF WALNUT STREET  
NEWTON, MASSACHUSETTS  
PROFILE - WALNUT STREET - 03

Sheet No.  
**24**  
AS NOTED

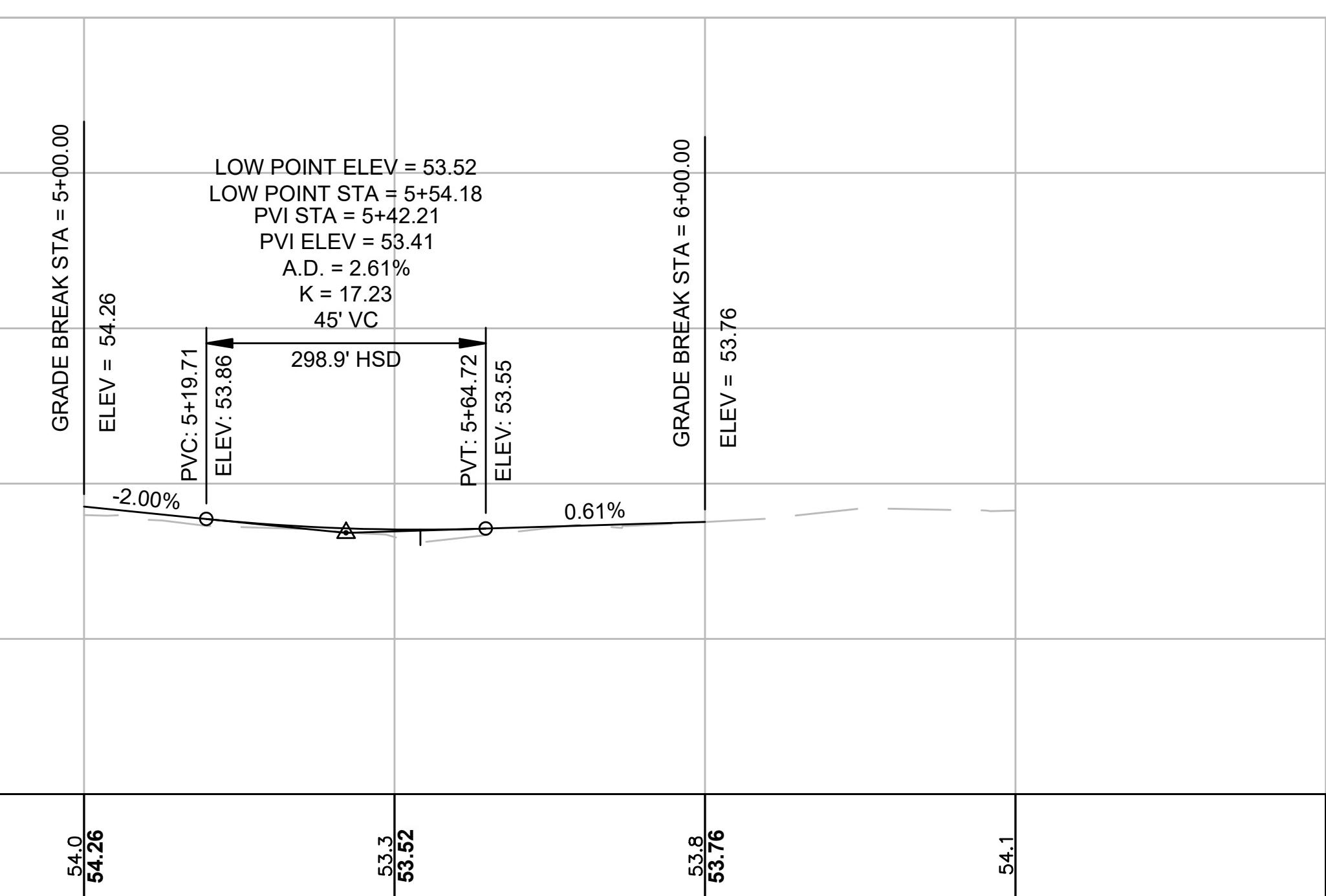
### ELM ROAD



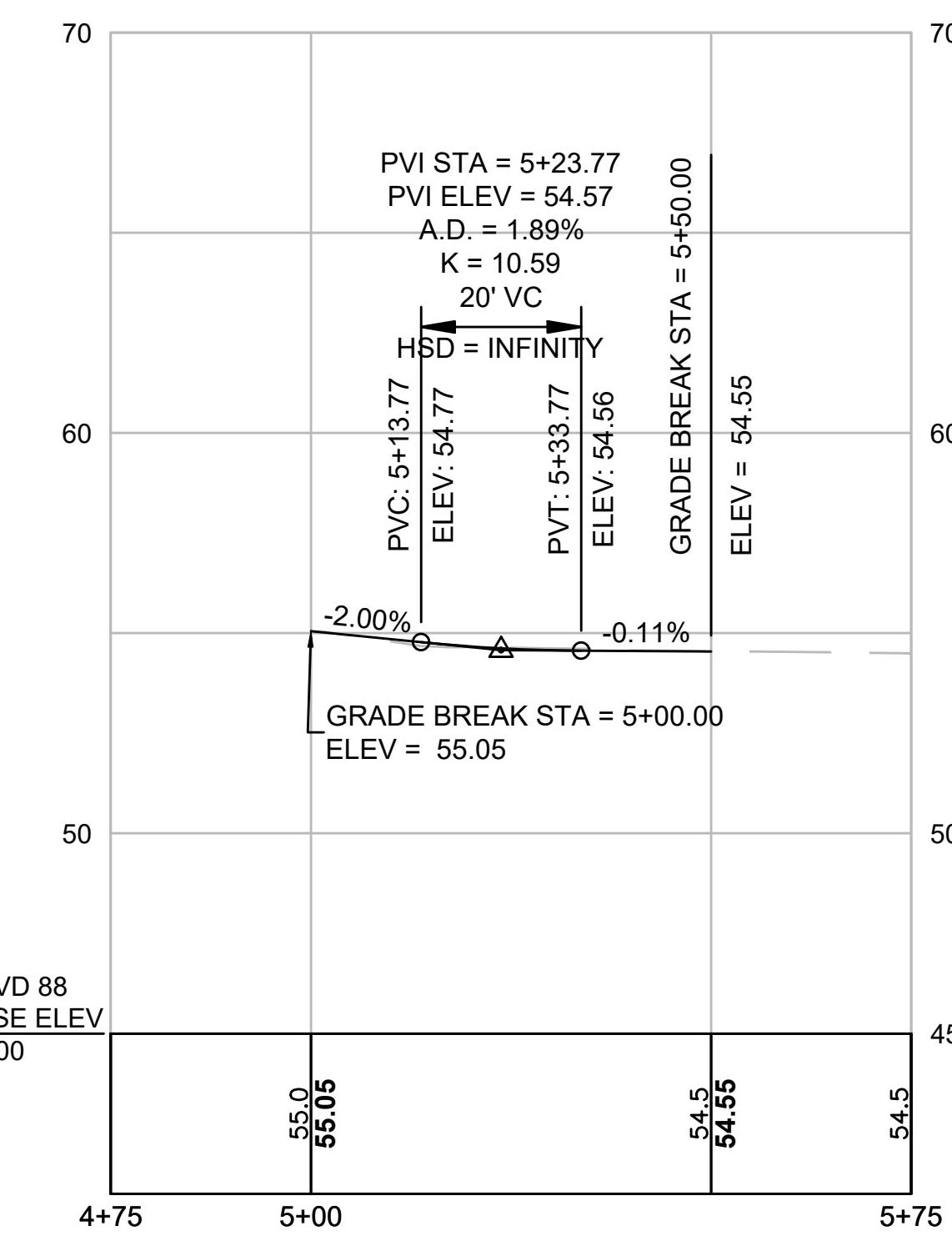
### RUSSELL COURT



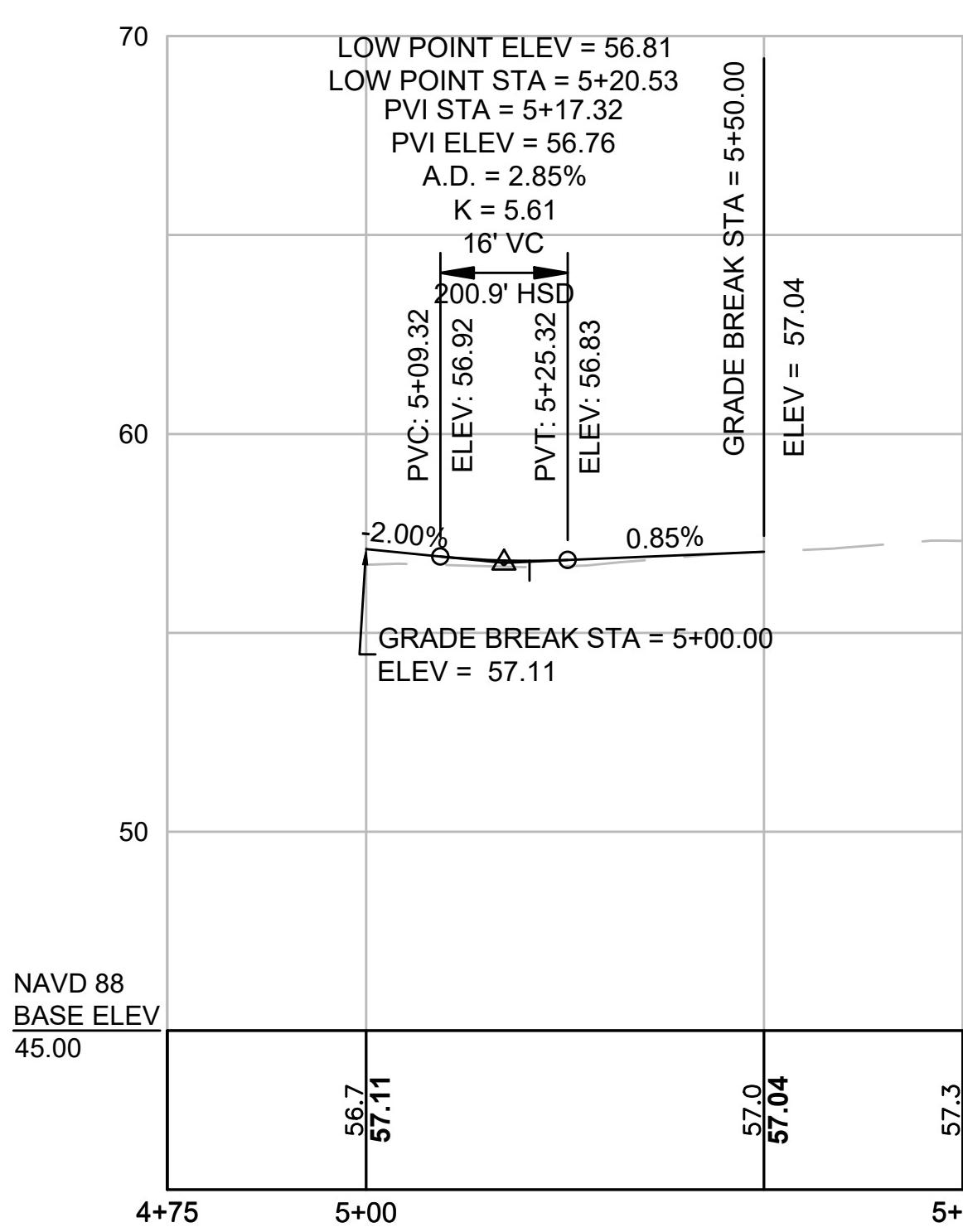
### CABOT STREET



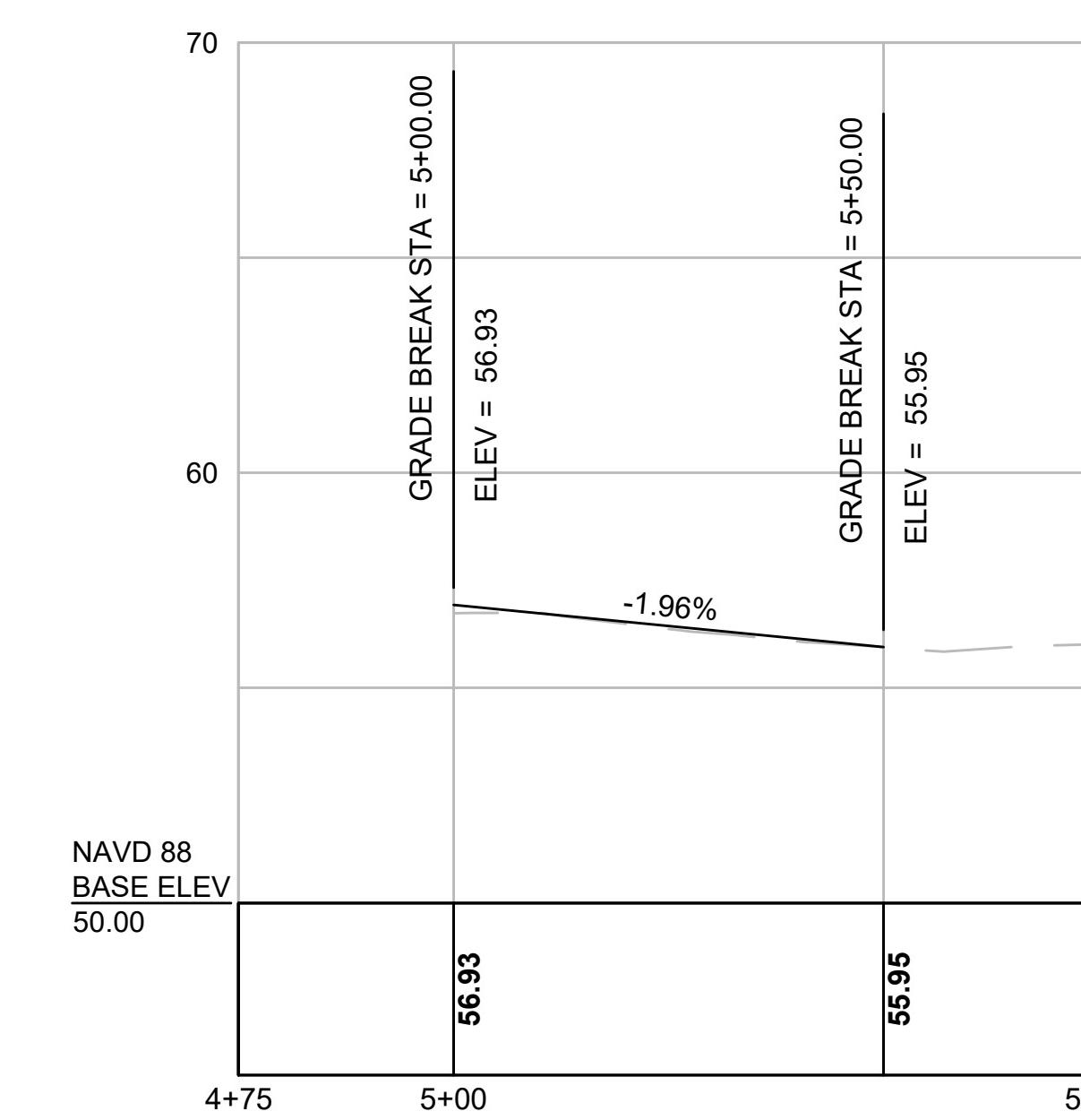
### OTIS STREET



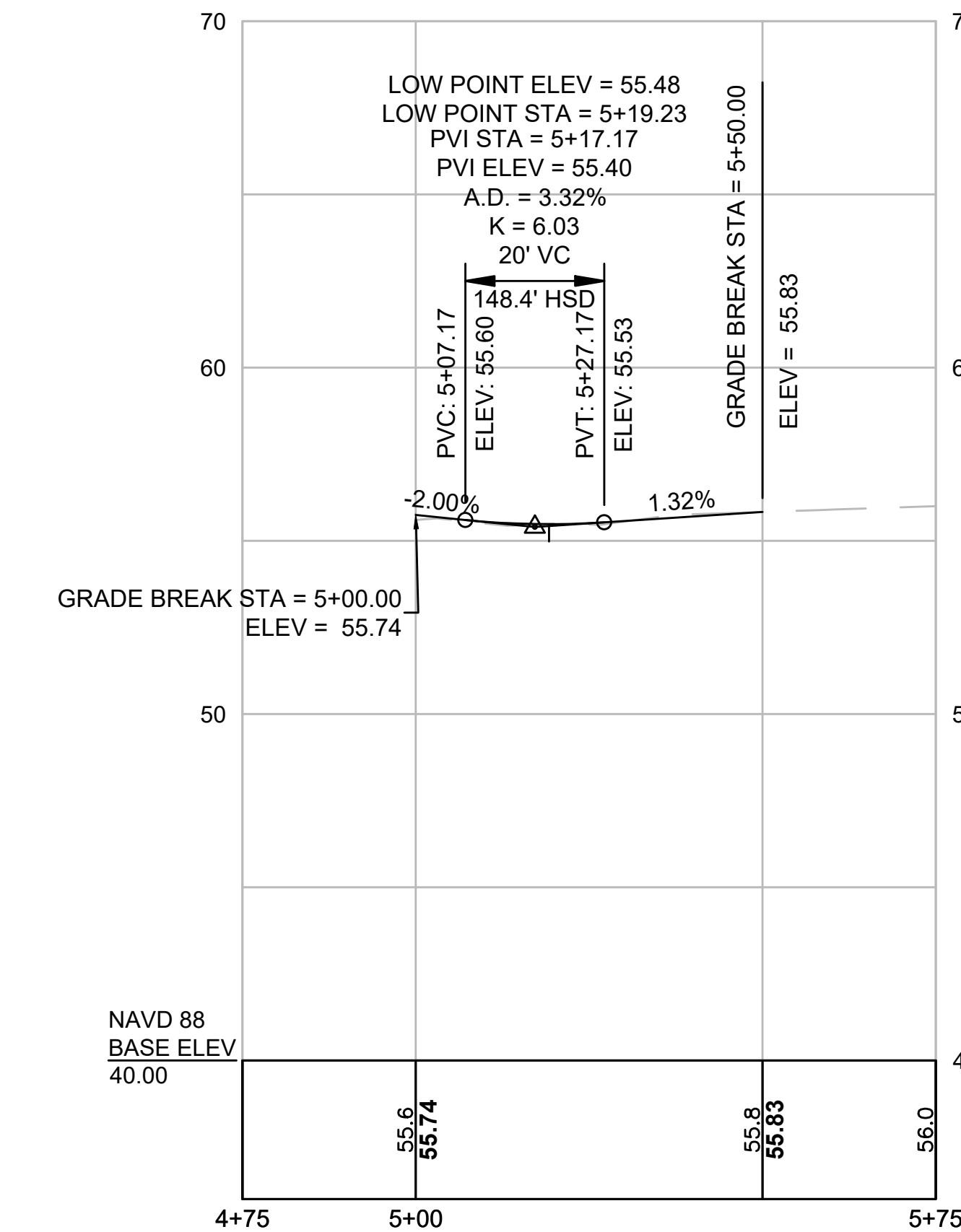
### WALNUT PLACE



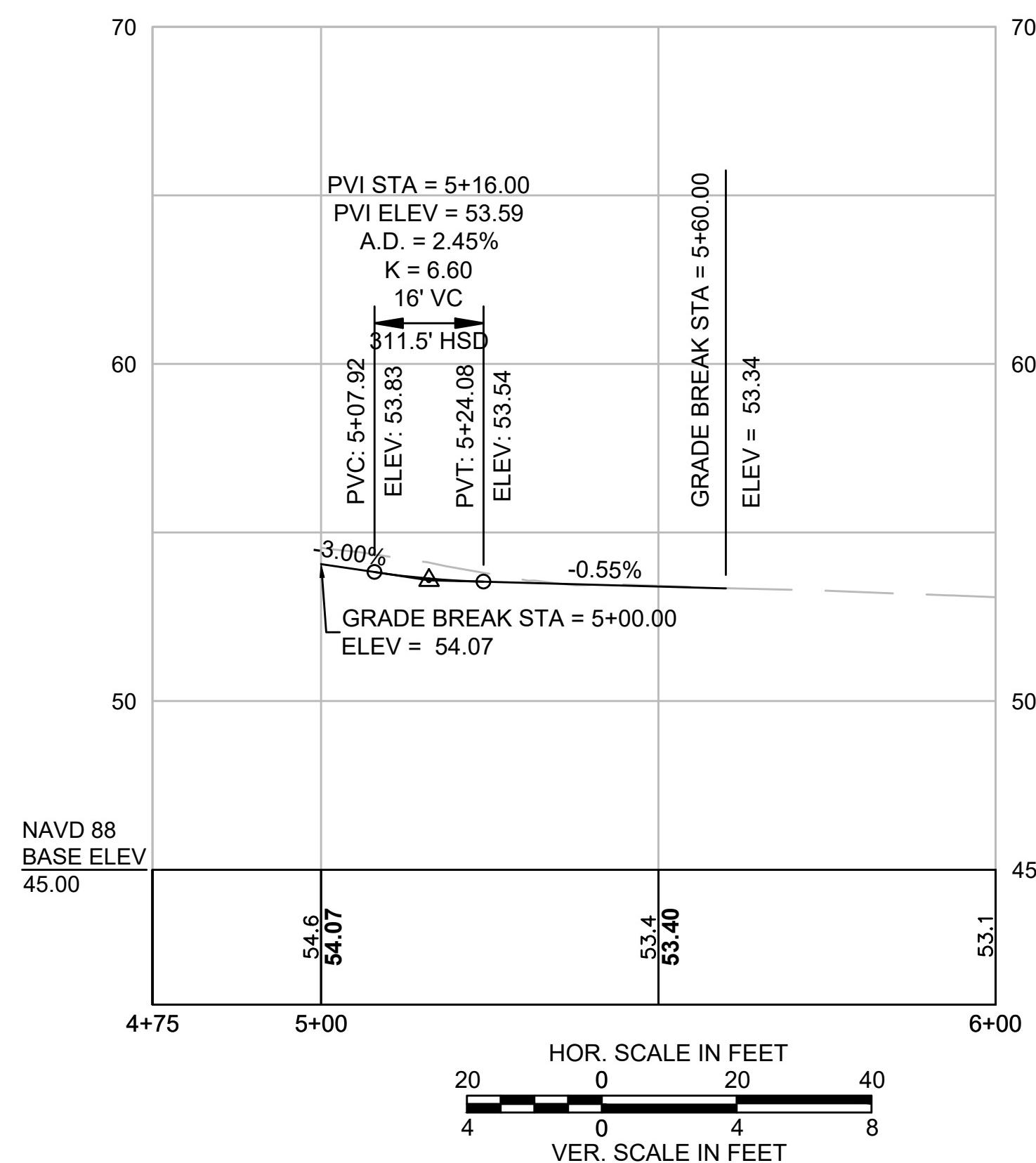
### WASHINGTON PARK



### CLAFLIN PLACE



### MADISON AVENUE



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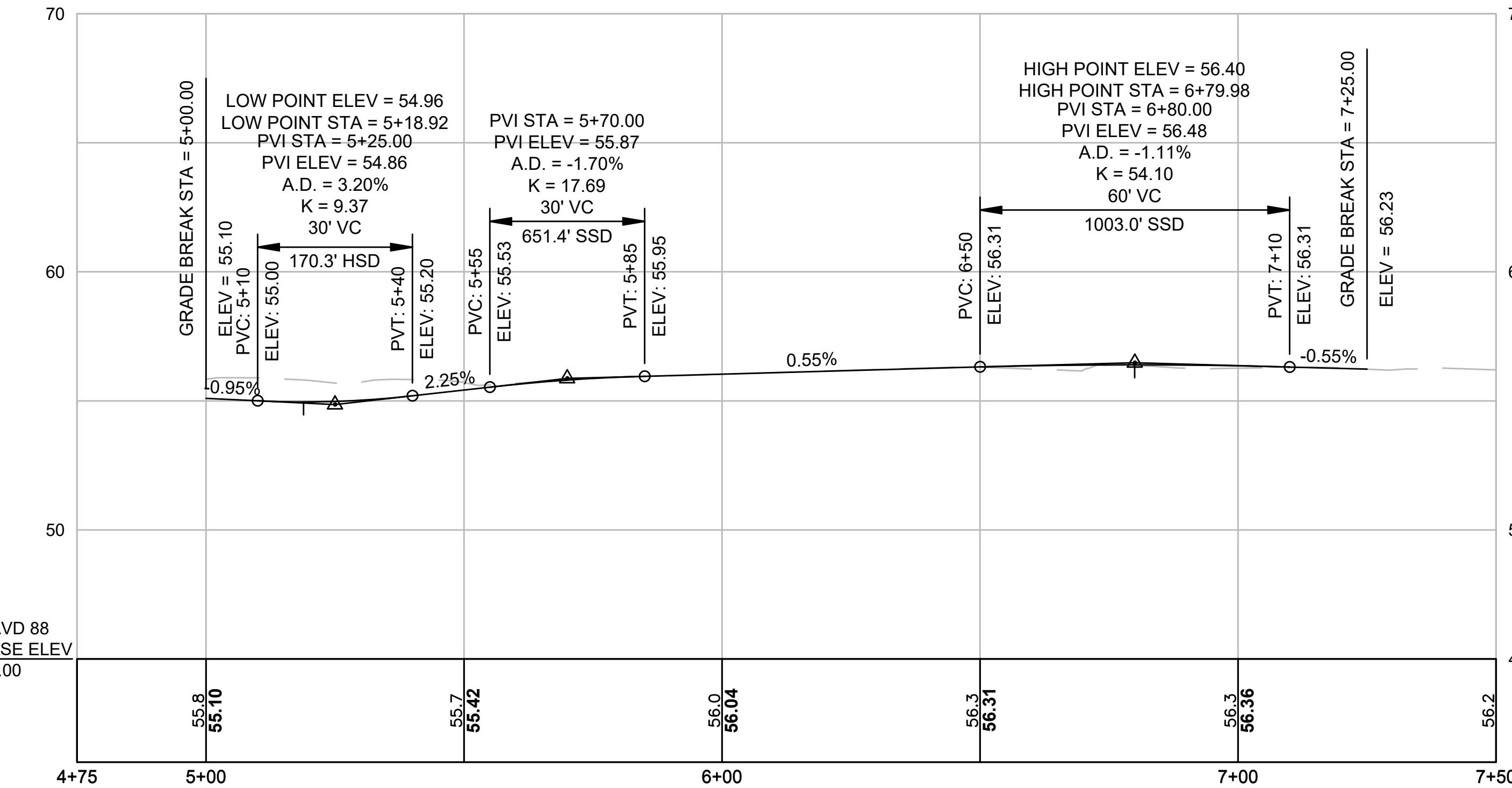
MARK	DATE	DESCRIPTION	Scale	AS NOTED
			Date	AUGUST 2019
			Job No.	R326-1605.00
			Designed by	JRC
			Drawn by	JRC
			Checked by	BLH
			Approved by	JDF

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22" X 34" DRAWING

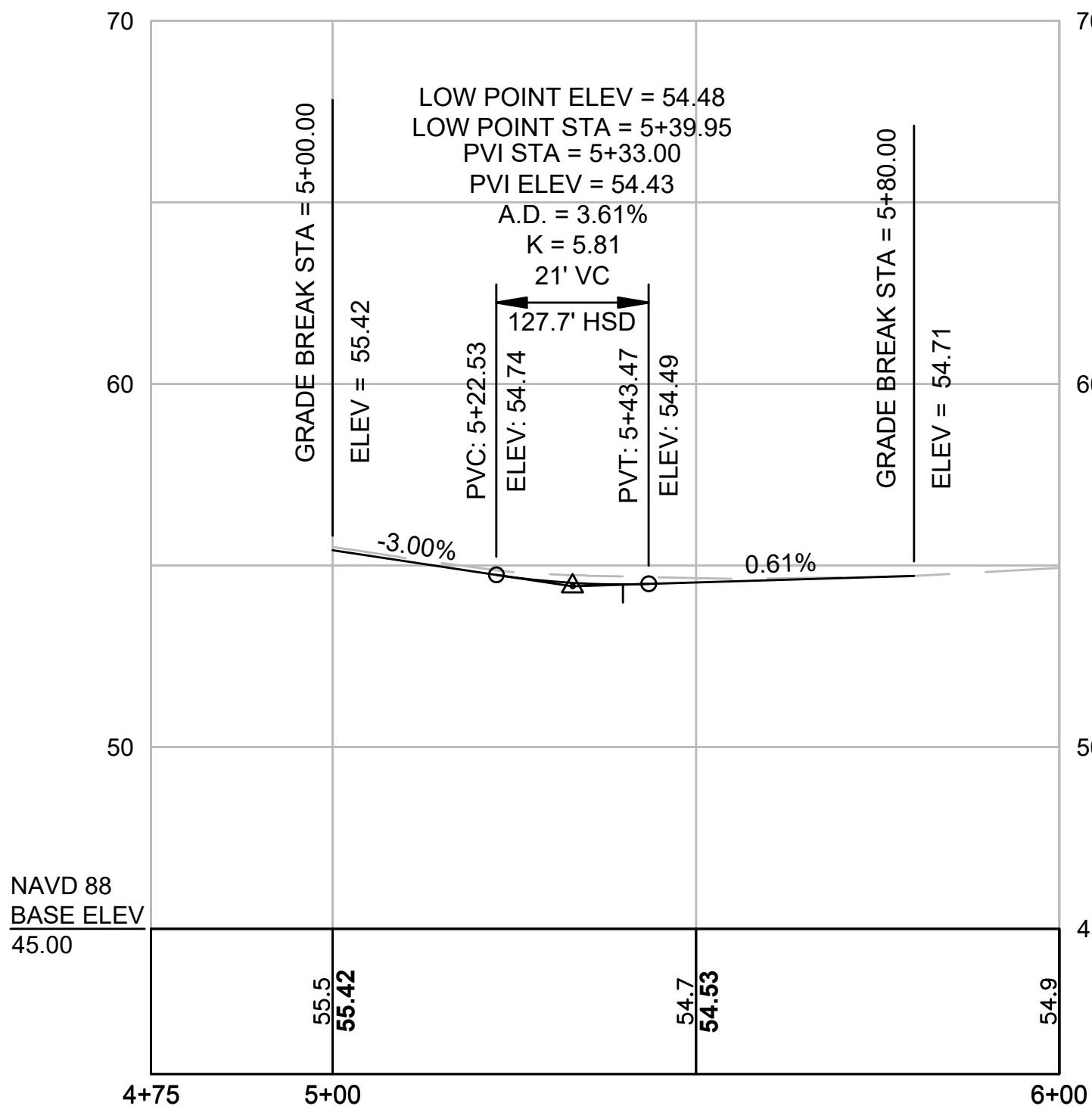
REHABILITATION OF WALNUT STREET  
NEWTON, MASSACHUSETTS  
PROFILES - SIDE STREETS - 01

Sheet No.  
**25**  
AS NOTED

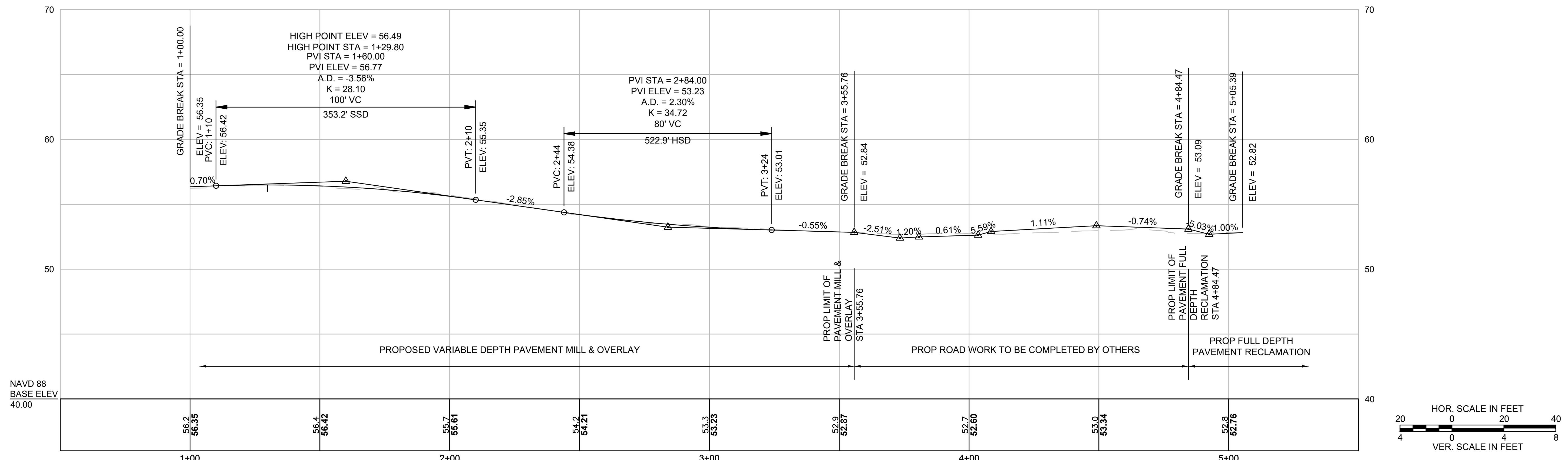
# HIGHLAND AVENUE



# NEWTONVILLE AVENUE



PHILIP BRAM WAY



# Environmental Partners GROUP

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			Scale	AS
			Date	AUC
			Job No.	R32
			Designed by	
			Drawn by	
			Checked by	
MARK	DATE	DESCRIPTION	Approved by	

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22" X 34" DRAW

# REHABILITATION OF WALNUT STREET NEWTON, MASSACHUSETTS

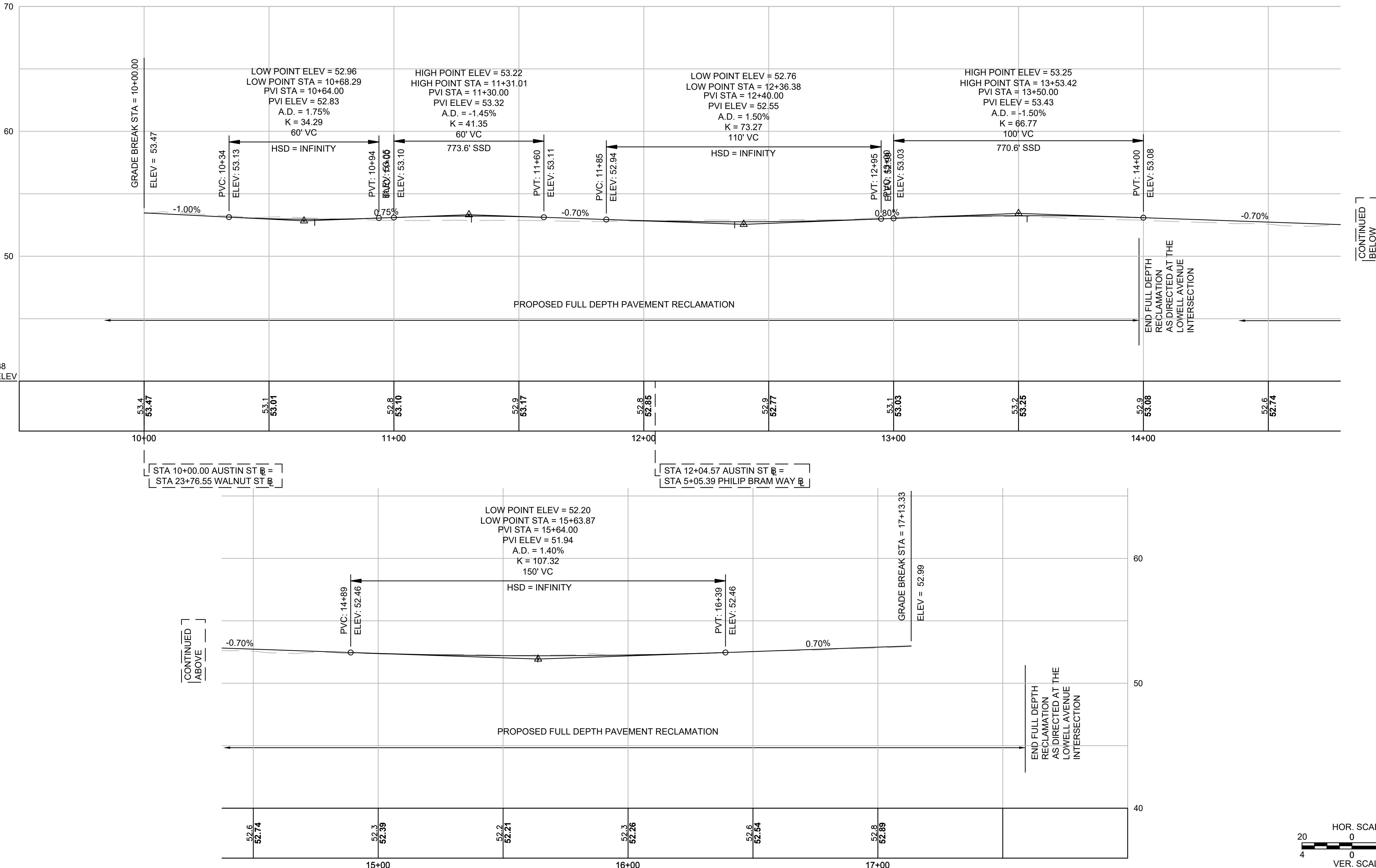
## PROFILES - SIDE STREETS - 02

Street No.

26

AS NOTED

# AUSTIN STREET



Drawing file: Newton-1605 Newton - Rehabilitation of Walnut Street\ACD\Street11\_Profiles - Side Streets.dwg Plot Date: Aug 02 2019 4:28pm



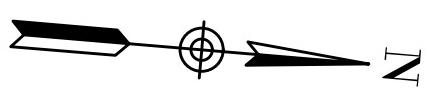
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			Date	AUGUST 2019
			Job No.	R326-1605.00
			Designed by	JRC
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			Checked by	BLH
			Approved by	JDF

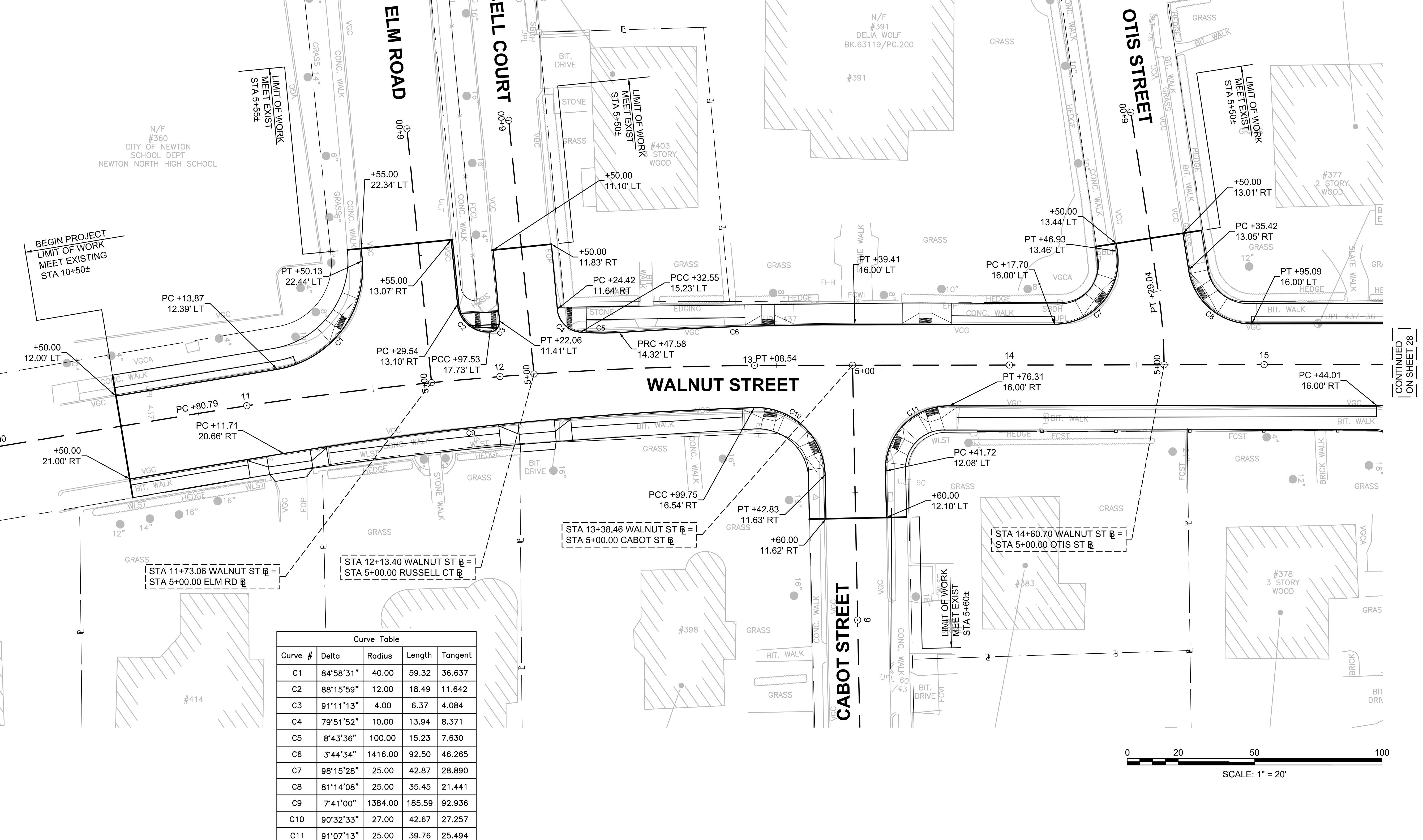
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**REHABILITATION OF WALNUT STREET**  
NEWTON, MASSACHUSETTS  
PROFILES - SIDE STREETS - 03

Sheet No.  
**26A**  
AS NOTED

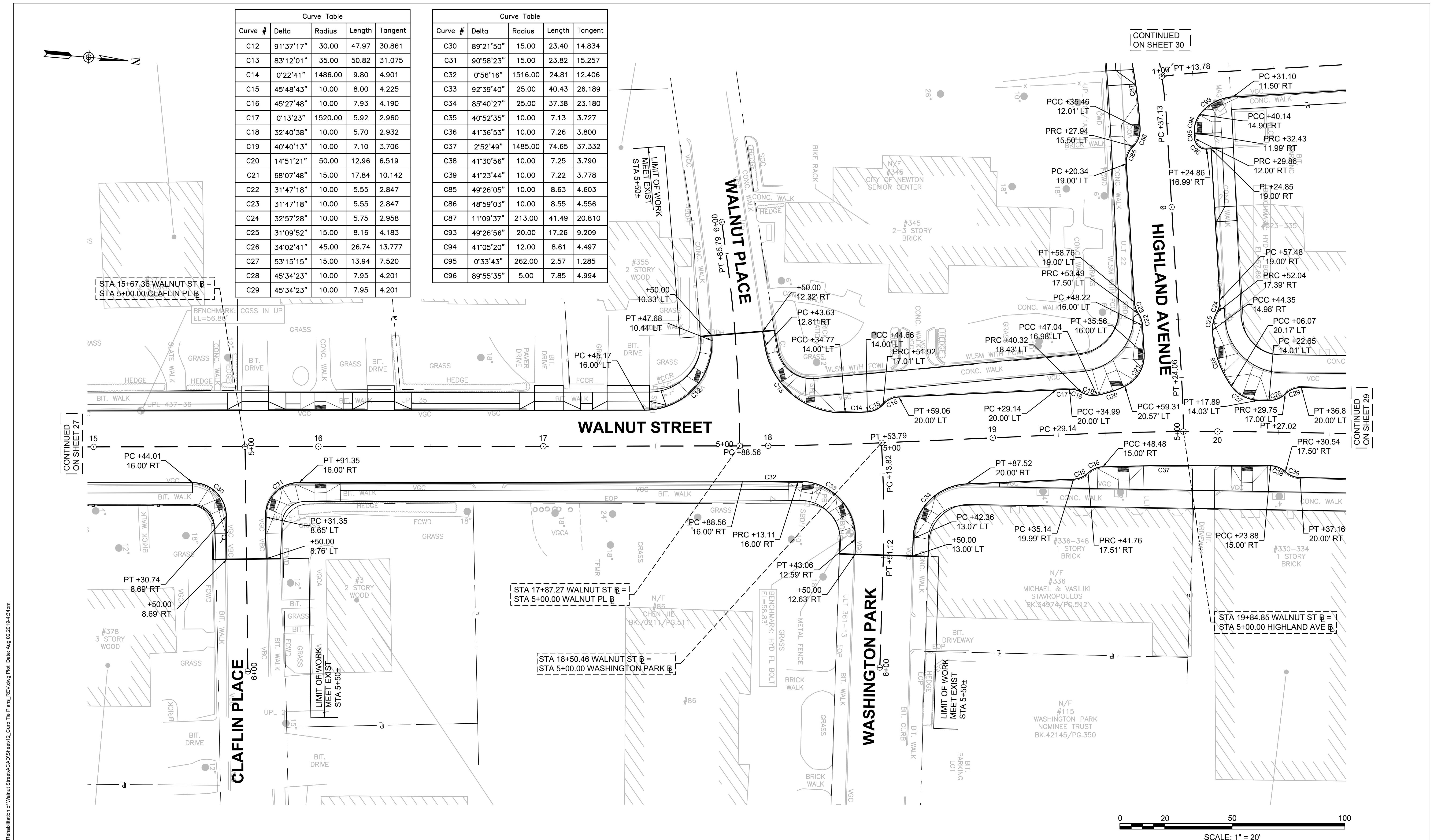


N/F  
#360  
CITY OF NEWTON  
SCHOOL DEPT  
NEWTON NORTH HIGH SCHOOL



MARK	DATE	DESCRIPTION	Approved by

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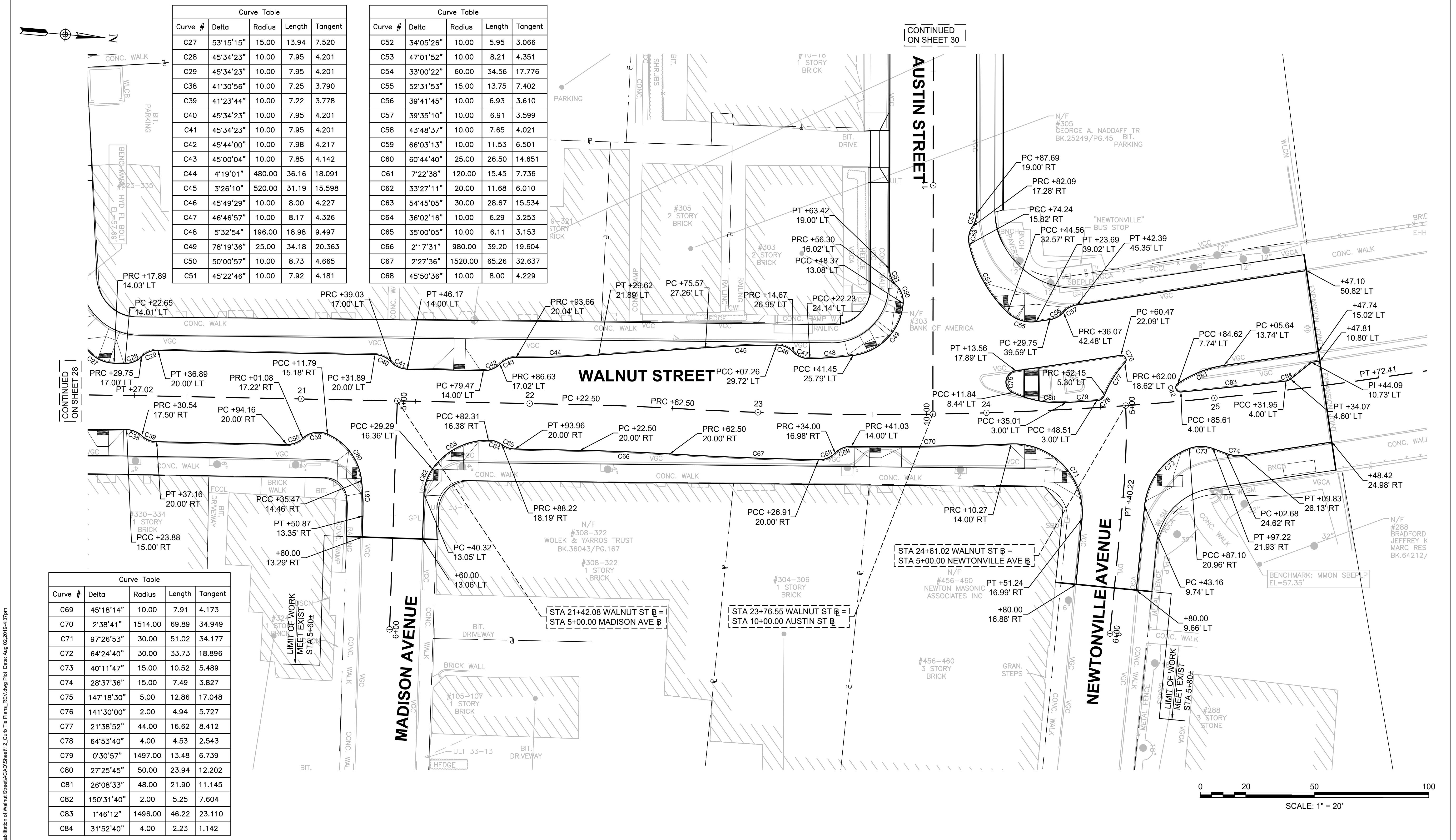
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MARK	DATE	DESCRIPTION	Approved by

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REHABILITATION OF WALNUT STREET  
NEWTON, MASSACHUSETTS  
CURB TIE PLANS - 02

Sheet No.  
**28**  
AS NOTED



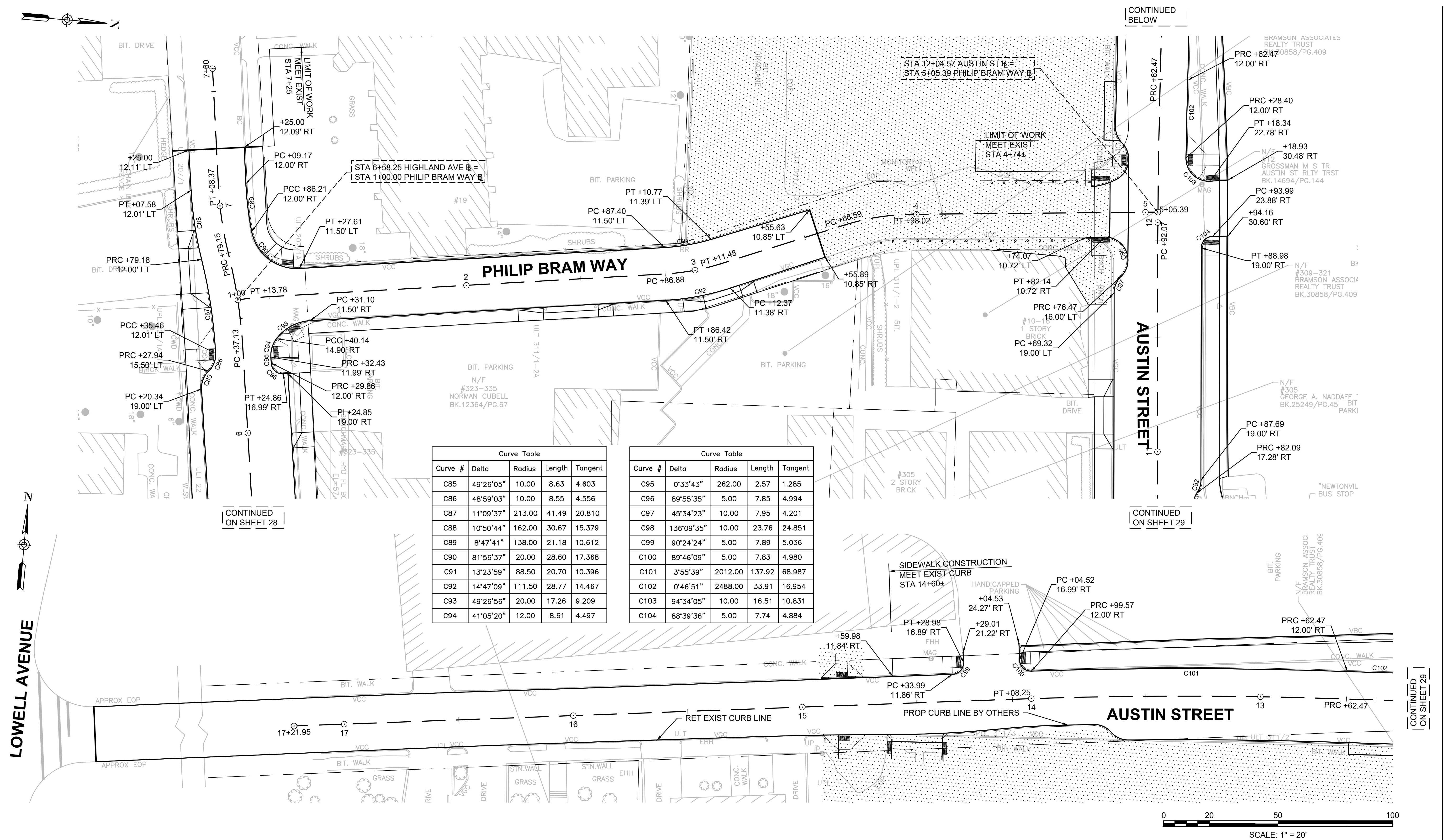
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			Approved by		

REHABILITATION OF WALNUT STREET  
NEWTON, MASSACHUSETTS

CURB TIE PLANS - 03

Sheet No. 29  
AS NOTED



# Environmental Partners GROUP

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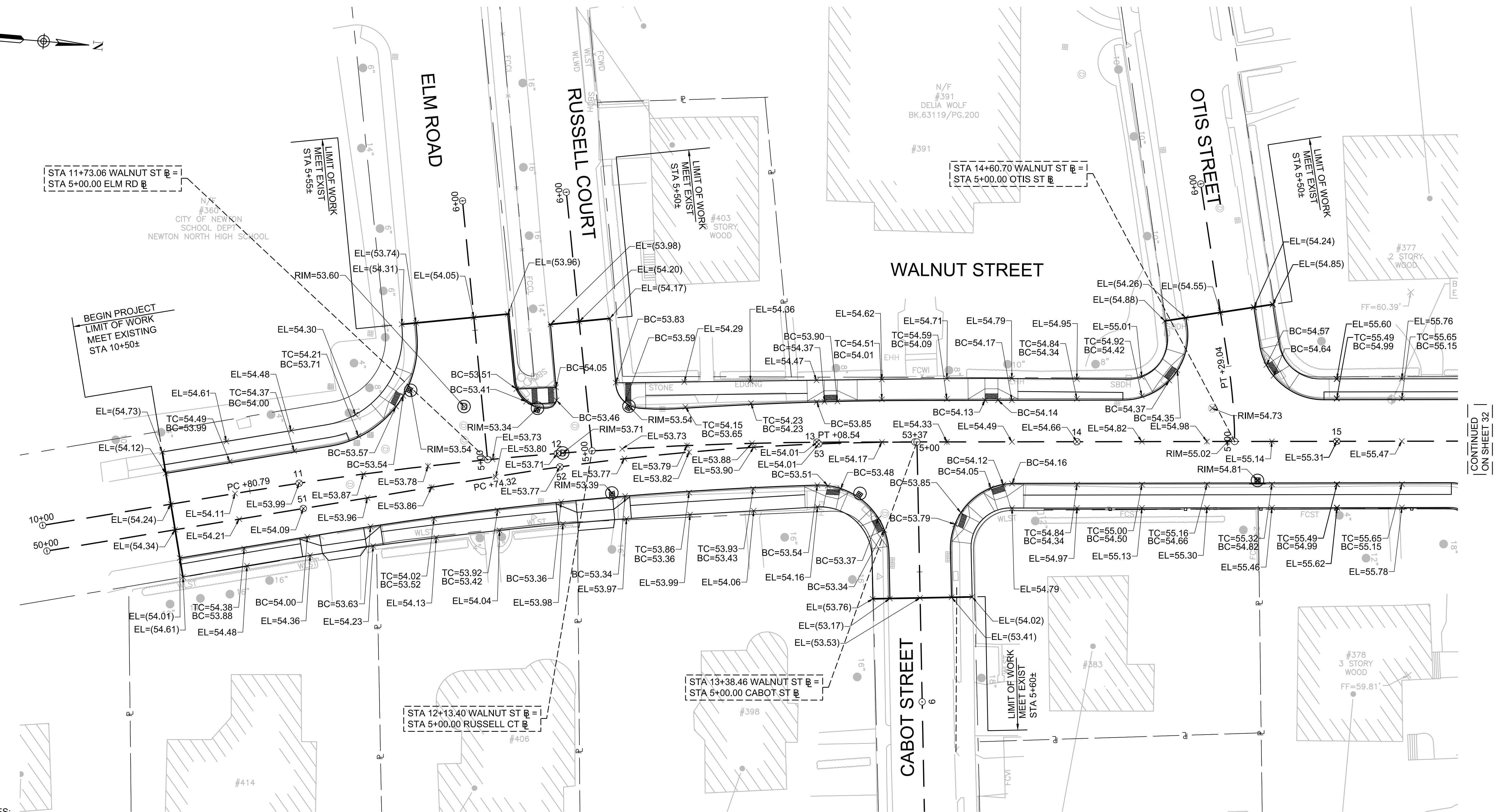
*A partnership for engineering solutions.*

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			Drawn
			Checke
MARK	DATE	DESCRIPTION	Approv

# REHABILITATION OF WALNUT STREET NEWTON, MASSACHUSETTS

## CURB TIE PLANS - 04

sheet No. 30 AS N



## NOTES:

1. PROPOSED VERTICAL GRANITE CURB REVEAL VARIES TO MEET EXISTING BACK OF SIDEWALK GRADES TO THE EXTENT PRACTICABLE. FINAL CURB REVEALS SHALL BE DETERMINED IN THE FIELD AND APPROVED BY THE ENGINEER.
2. ALL GRADES SHOWN ARE BASED ON TOPOGRAPHIC SURVEY INFORMATION. ACTUAL FIELD CONDITIONS MAY VARY. GRADES PROVIDED ARE FOR BIDDING PURPOSES ONLY AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR. ANY INCONSISTENCIES SHALL BE REPORTED IMMEDIATELY TO THE ENGINEER FOR REMEDY PRIOR TO ADVANCING ANY WORK.
3. THE CONTRACTOR SHALL VERIFY THAT ALL GRADES ARE ADA/AAB COMPLIANT PRIOR TO INSTALLATION OF ANY CONCRETE STRUCTURES. FAILURE TO DO SO SHALL RESULT IN THE REPLACEMENT OF NON COMPLIANT CONCRETE STRUCTURES AT NO ADDITIONAL COST TO THE CITY OF NEWTON.
4. TOP OF CURB ELEVATION AT LIMITS OF WORK SHALL MEET ADJOINING EXISTING TOP OF CURB ELEVATIONS.

LEGEND  
 EL=55.20  
 BC=55.20  
 TC=55.20  
 EL=(55.20)

PROPOSED ELEVATION  
 PROPOSED BOTTOM CURB ELEVATION  
 PROPOSED TOP CURB ELEVATION  
 EXISTING ELEVATION

0 20 50 100  
 SCALE: 1" = 20'



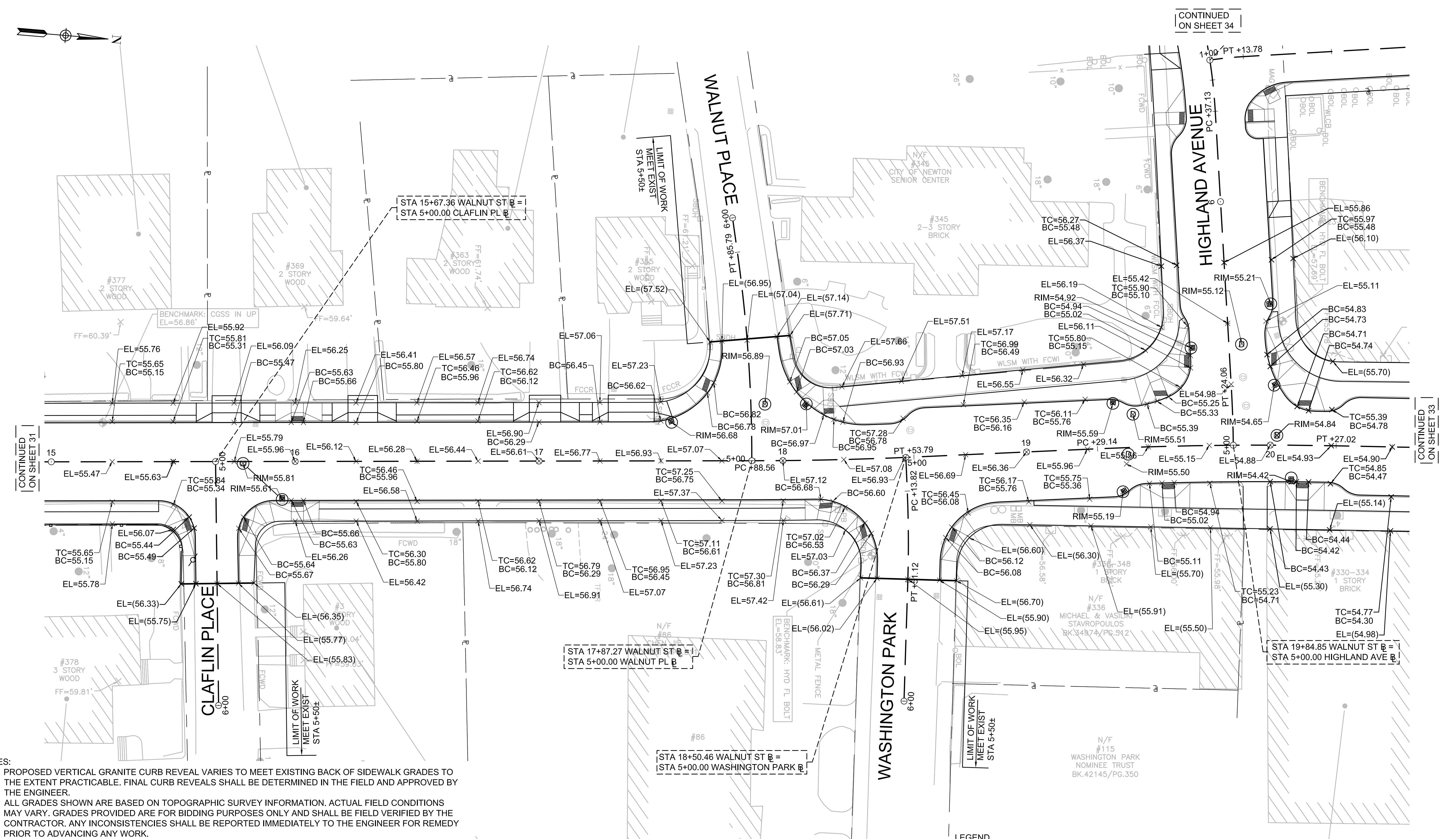
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			Date	AUGUST 2019
			Job No.	R326-1605.00
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			Drawn by	KMB
			Checked by	BLH
			Approved by	JDF

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REHABILITATION OF WALNUT STREET  
 NEWTON, MASSACHUSETTS  
 GRADING PLANS - 01

Sheet No.  
**31**  
 AS NOTED



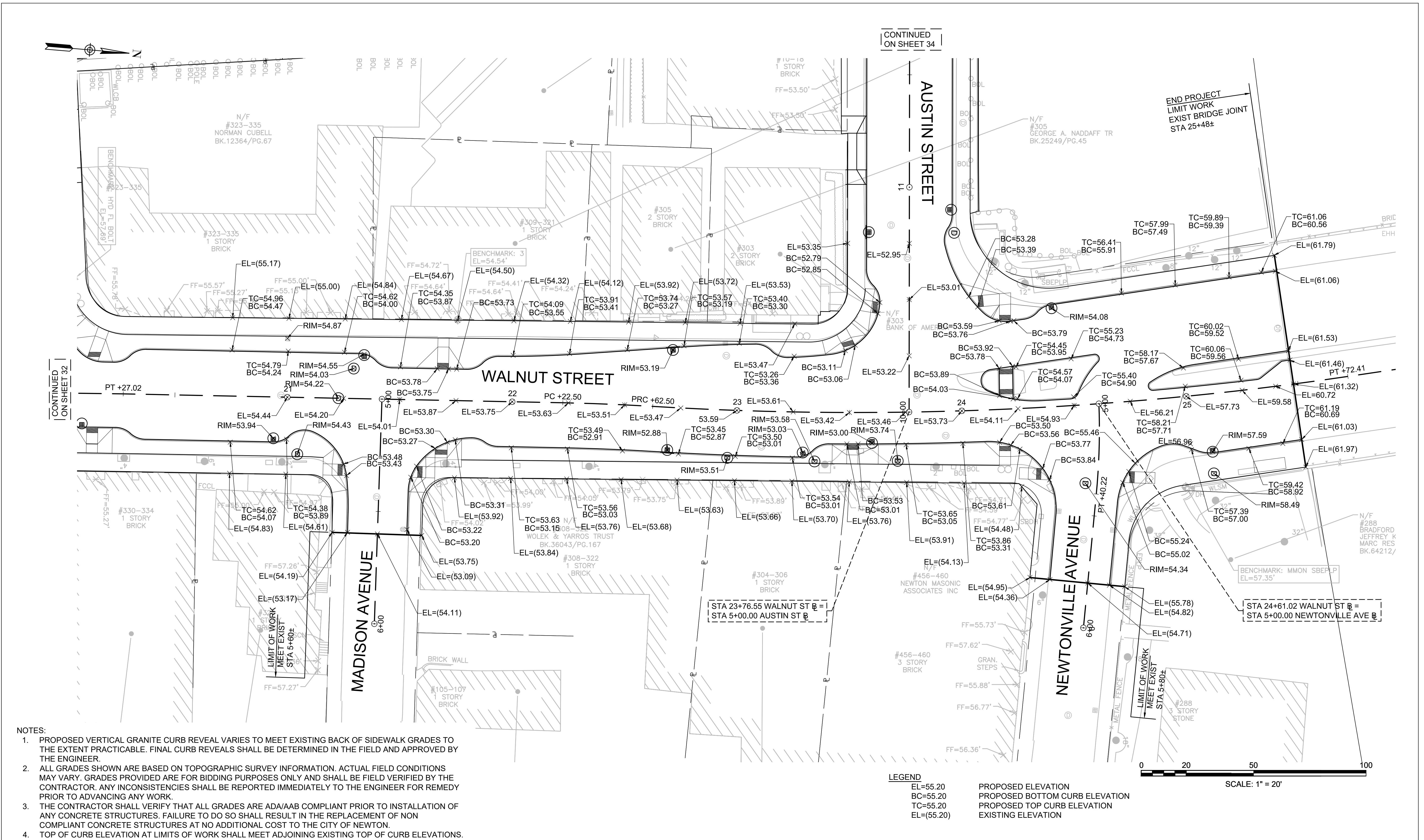
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			Checked by	BLH
			Approved by	JDF

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**REHABILITATION OF WALNUT STREET  
NEWTON, MASSACHUSETTS**  
GRADING PLANS - 02

Sheet No.  
**32**  
AS NOTED



**Environmental Partners**  
GROUP  
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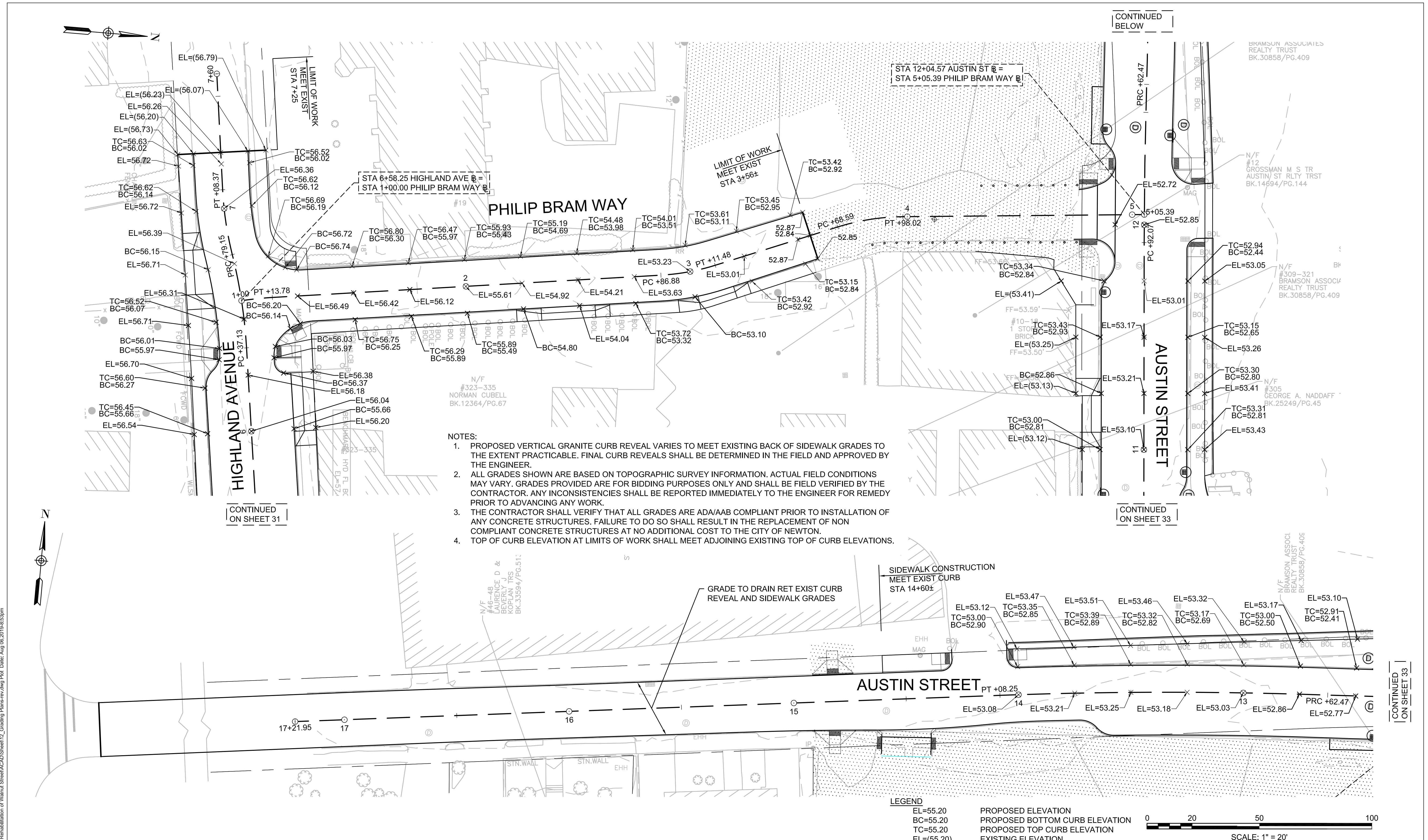
MARK	DATE	DESCRIPTION	Scale	AS NOTED
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			Job No.	R326-1605.00
			Designed by	JRC
			Drawn by	KMB
			Checked by	BLH
			Approved by	JDF

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**REHABILITATION OF WALNUT STREET**  
**NEWTON, MASSACHUSETTS**

**GRADING PLANS - 03**

Sheet No. **33**



**Environmental Partners**  
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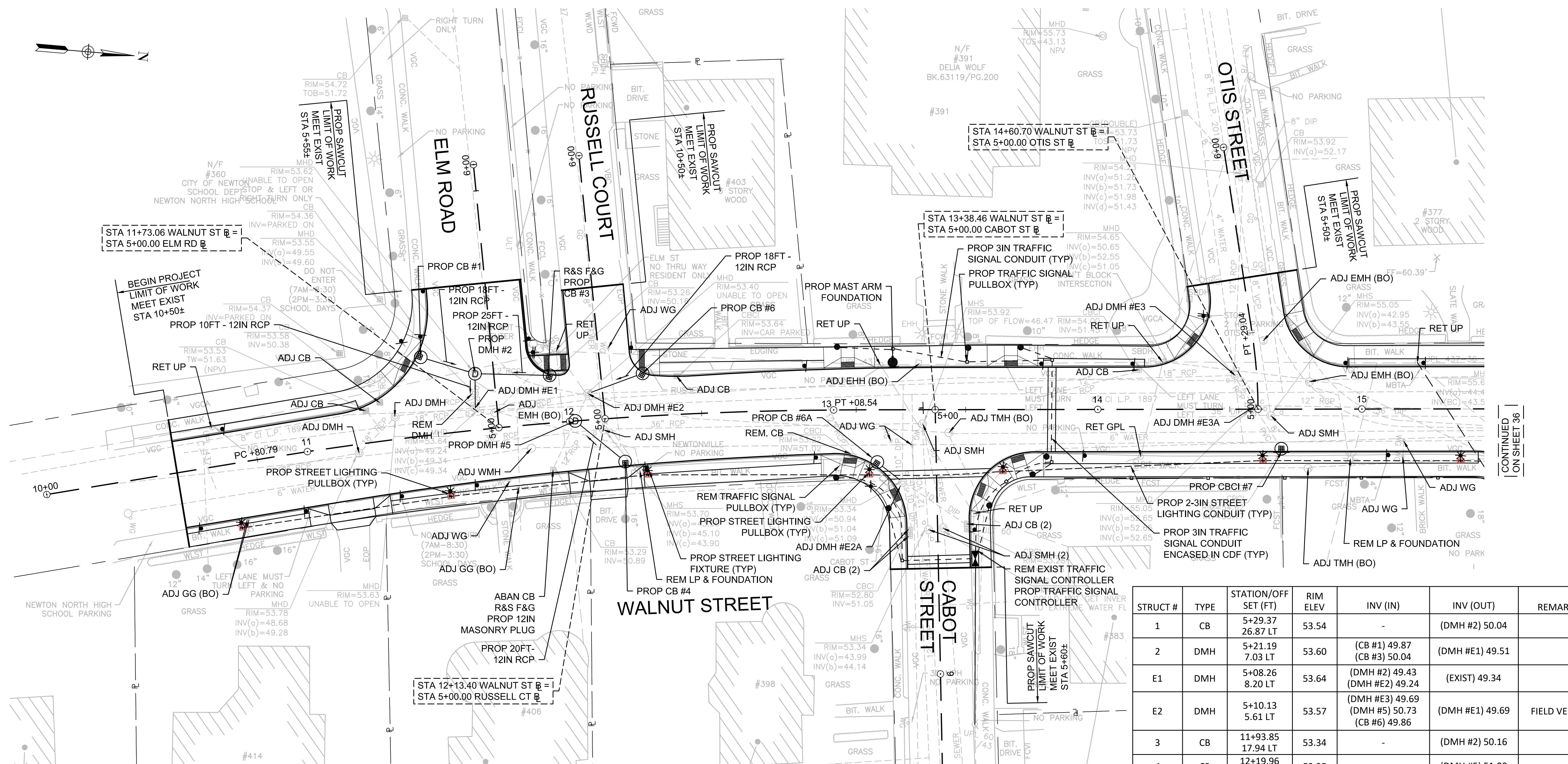
MARK	DATE	DESCRIPTION
		Approved by JDF

Scale	AS NOTED
Date	AUGUST 2019
Job No.	R326-1605.00
Designed by	JRC
Drawn by	KMB
Checked by	BLH
Approved by	JDF

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**REHABILITATION OF WALNUT STREET**  
**NEWTON, MASSACHUSETTS**  
**GRADING PLANS - 04**

Sheet No. 34  
AS NOTED



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MARK	DATE	DESCRIPTION	Scale	AS NOTED
			Date	AUGUST 2019
			Job No.	R326-1605.00
			Designed by	JRC
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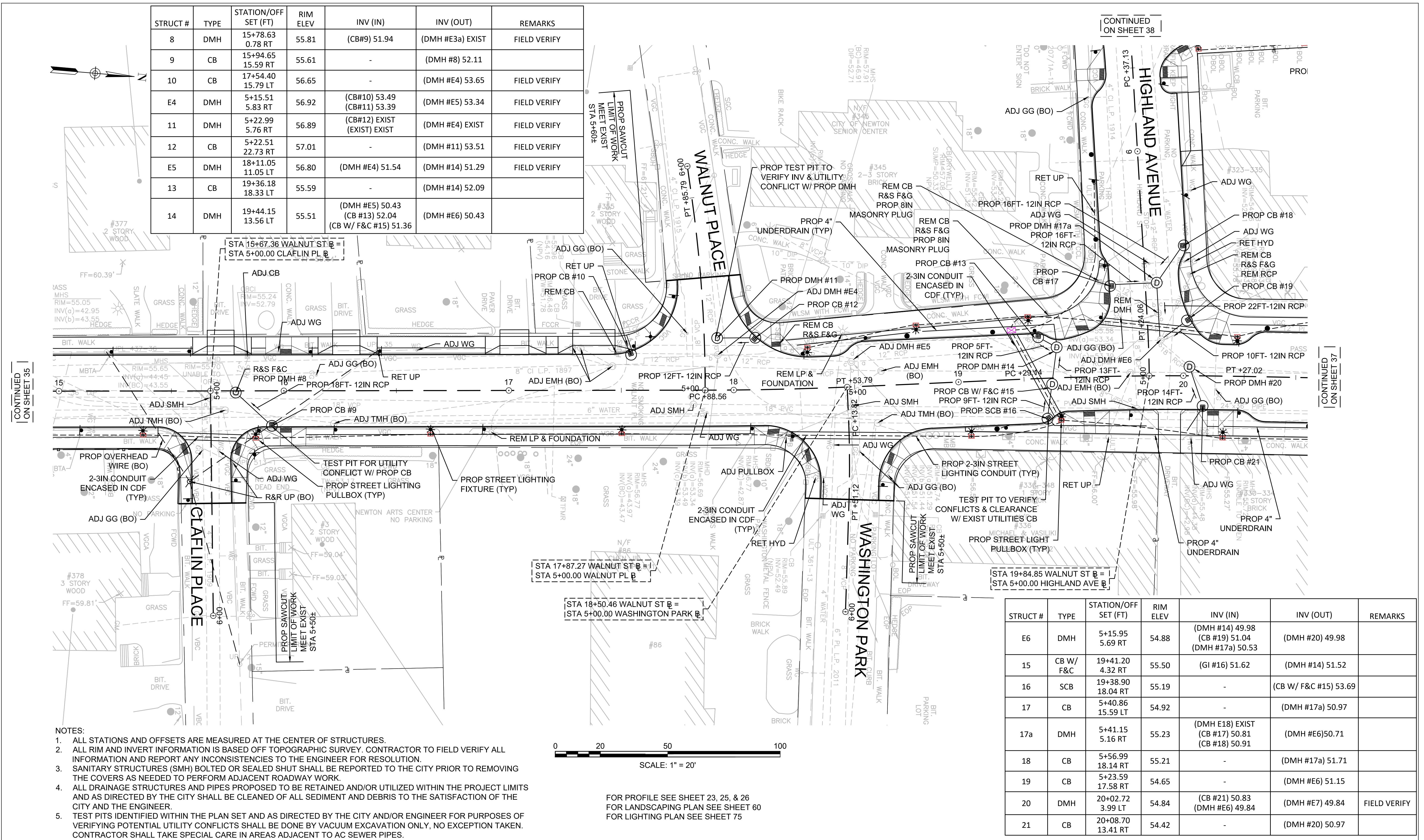
### REHABILITATION OF WALNUT STREET NEWTON, MASSACHUSETTS

#### UTILITY PLAN- 01

Sheet No.  
**35**  
AS NOTED

CONTINUED  
ON SHEET 36

STRUCT #	TYPE	STATION/OFF SET (FT)	RIM ELEV	INV (IN)	INV (OUT)	REMARKS
1	CB	5+29.37 26.87 LT	53.54	-	(DMH #2) 50.04	
2	DMH	5+21.19 7.03 LT	53.60	(CB #1) 49.87 (CB #3) 50.04	(DMH #1) 49.51	
E1	DMH	5+08.26 8.20 LT	53.64	(DMH #2) 49.43 (DMH #2) 49.24	(EXIST) 49.34	
E2	DMH	5+10.13 5.61 LT	53.57	(DMH #3) 49.69 (DMH #5) 50.73 (CB #6) 49.86	(DMH #1) 49.69	FIELD VERIFY
3	CB	11+93.85 17.94 LT	53.34	-	(DMH #2) 50.16	
4	CB	12+19.96 16.71 RT	53.35	-	(DMH #5) 51.00	
5	DMH	12+02.10 0.00	53.71	(CB#4) 50.80 (EXIST CB) 50.80	(DMH #2) 50.77	FIELD VERIFY
6	CB	12+28.61 16.23 LT	53.54	-	(DMH #2) 50.04	
6A	CB	13+16.00 21.50 RT	53.47	-	(DMH #2A) 51.13	
E2A	DMH	13+26.50 27.50 RT	53.38	(CB#6A) 51.04 (EXIST)	(EXIST)	
E3	DMH	5+13.39 8.06 LT	54.73	(DMH #3a) 52.55	(DMH #2) 51.05	FIELD VERIFY
E3a	DMH	14+58.94 0.94 LT	55.02	(CB #7) 52.65 (DMH #8) 52.65	(DMH #3) 52.65	
7	CB	14+69.47 15.00 RT	54.81	-	(DMH #3a) 53.17	FIELD VERIFY



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Scale	AS NOTED
Date	AUGUST 2019
Job No.	R326-1605.00
Designed by	JRC
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Checked by	BLH
Approved by	JDF

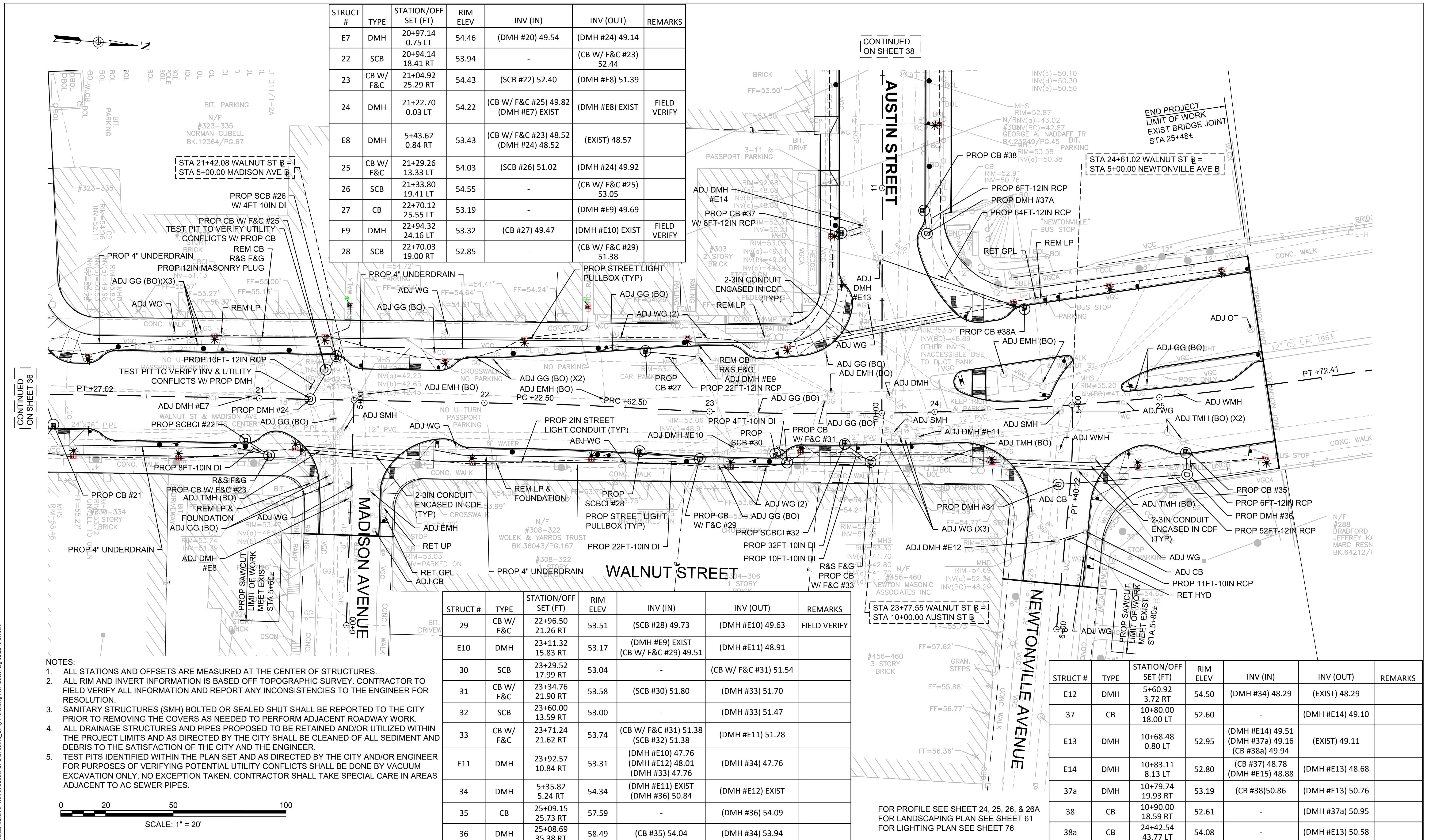
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### REHABILITATION OF WALNUT STREET NEWTON, MASSACHUSETTS

UTILITY PLAN- 02

Sheet No.  
**36**

AS NOTED



# Environmental Partners GROUP

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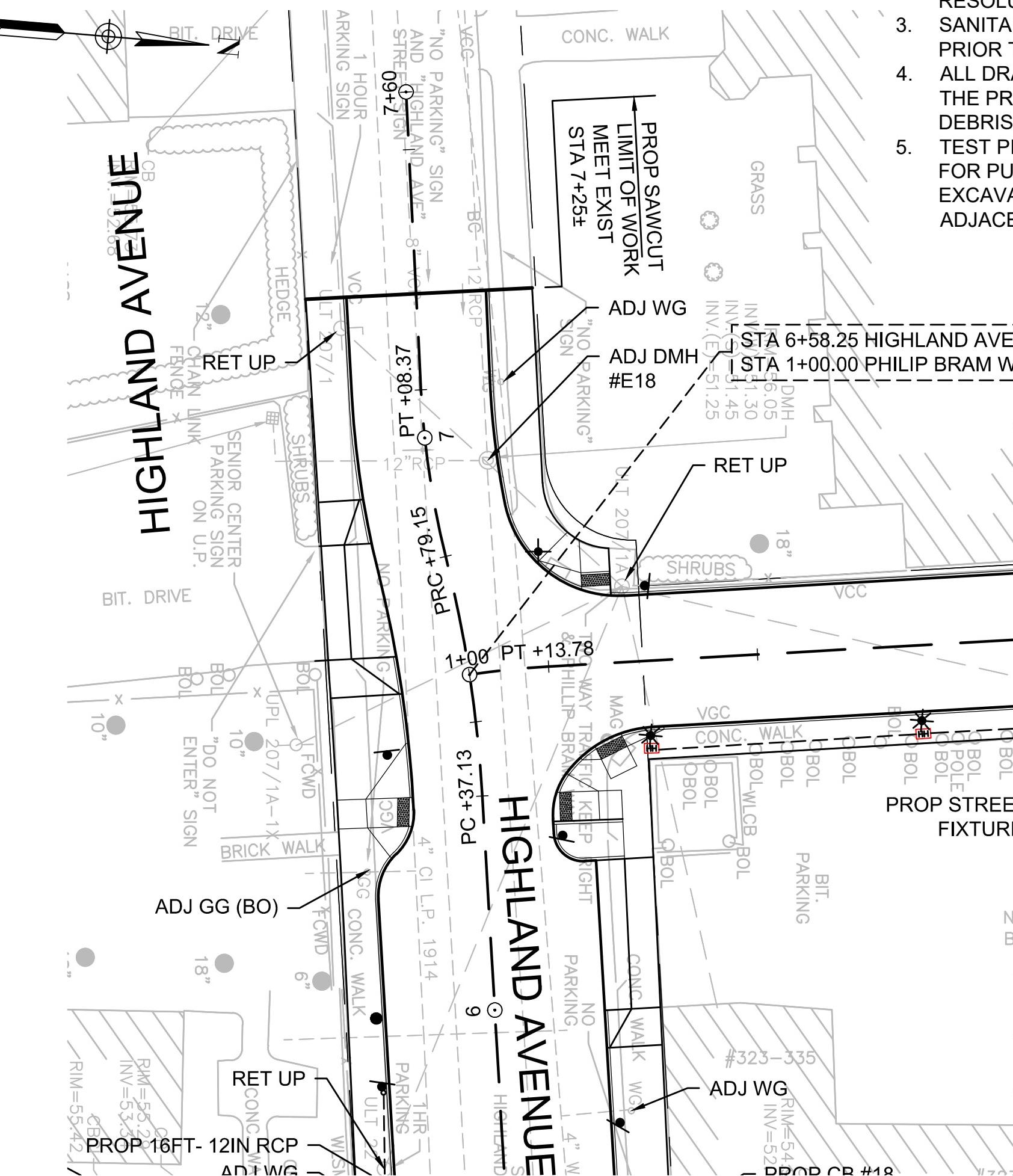
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	Date	AUGUST 2019				
	Job No.	R326-1605.00				
	Designed by	JRC				
	Drawn by	KMB				
	Checked by	BLH				
MARK	DATE	DESCRIPTION	Approved by	JDF	AS NOTED	
<b>REHABILITATION OF WALNUT STREET NEWTON, MASSACHUSETTS</b>  <b>UTILITY PLAN- 03</b>					Sheet No.  <b>37</b>	

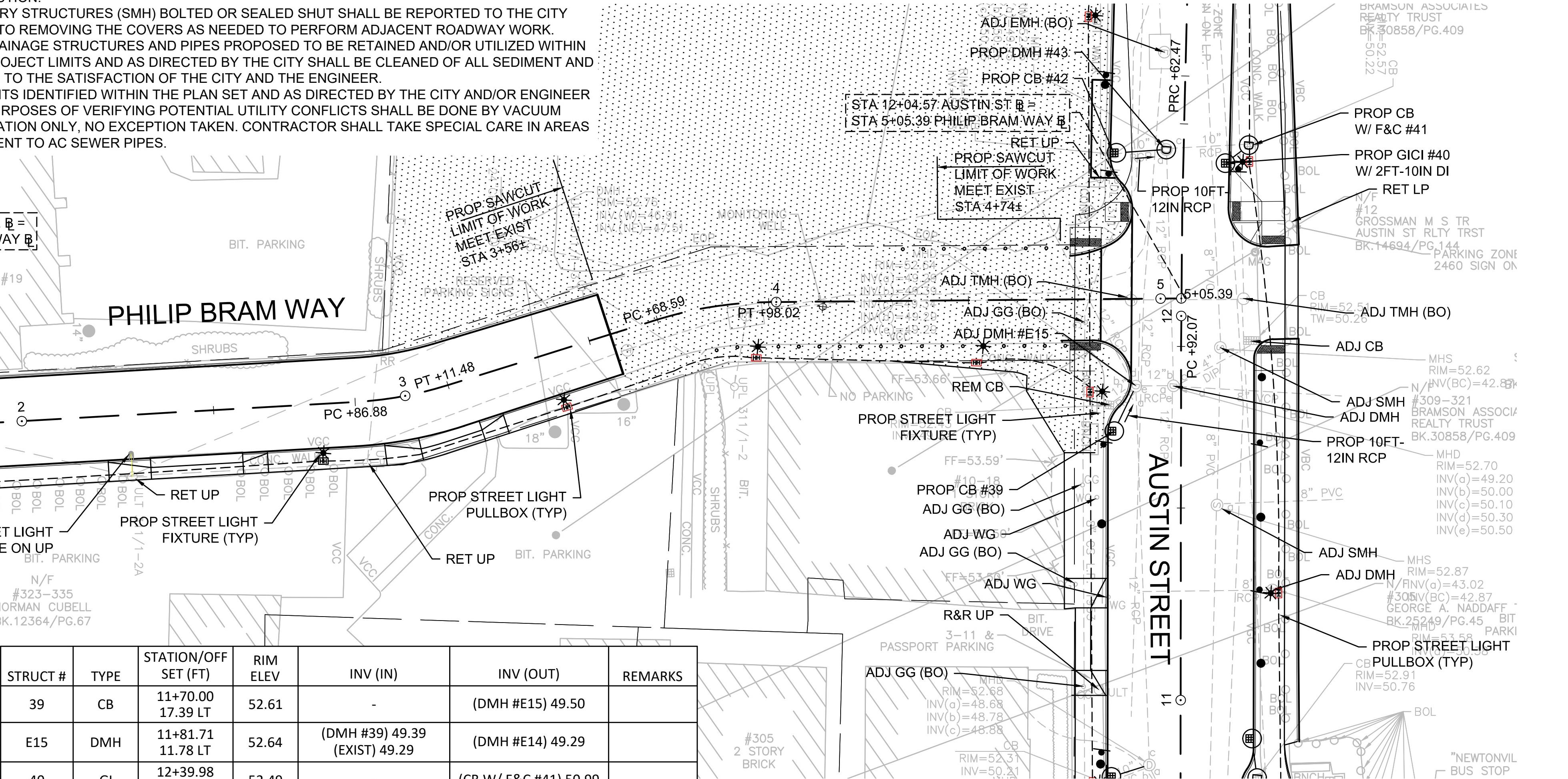
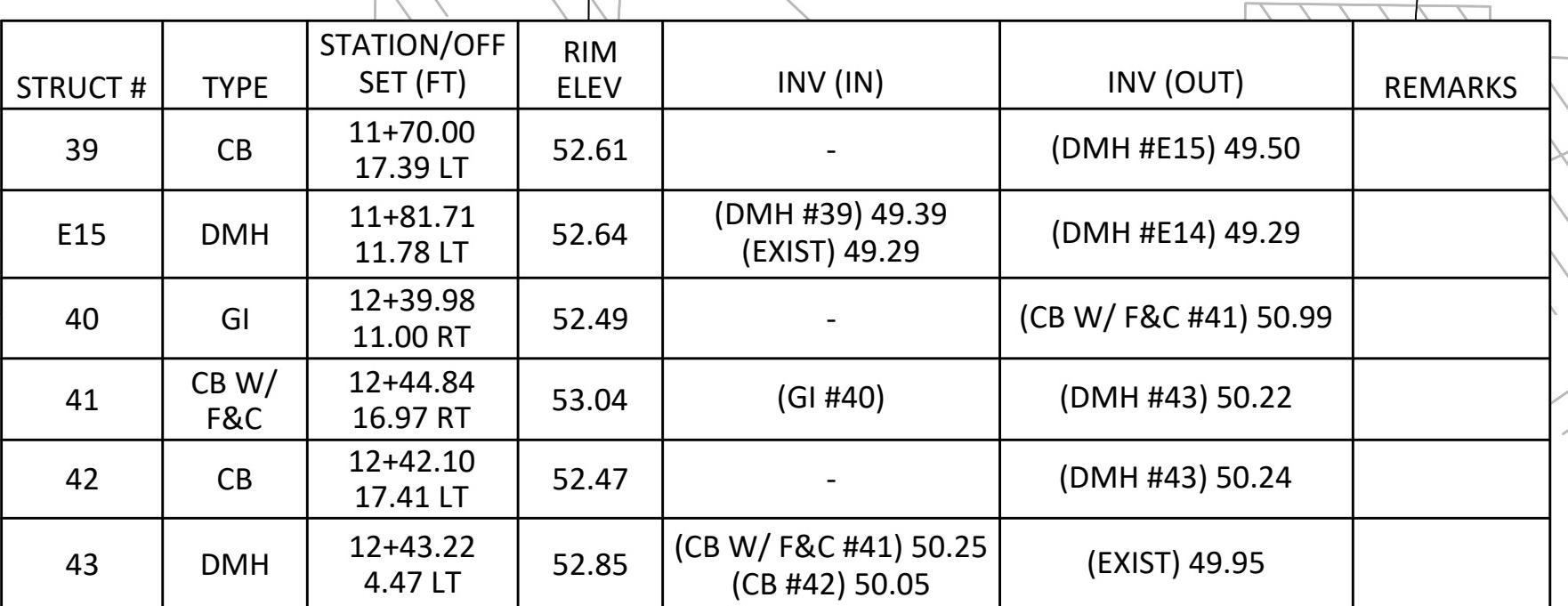
NOTE

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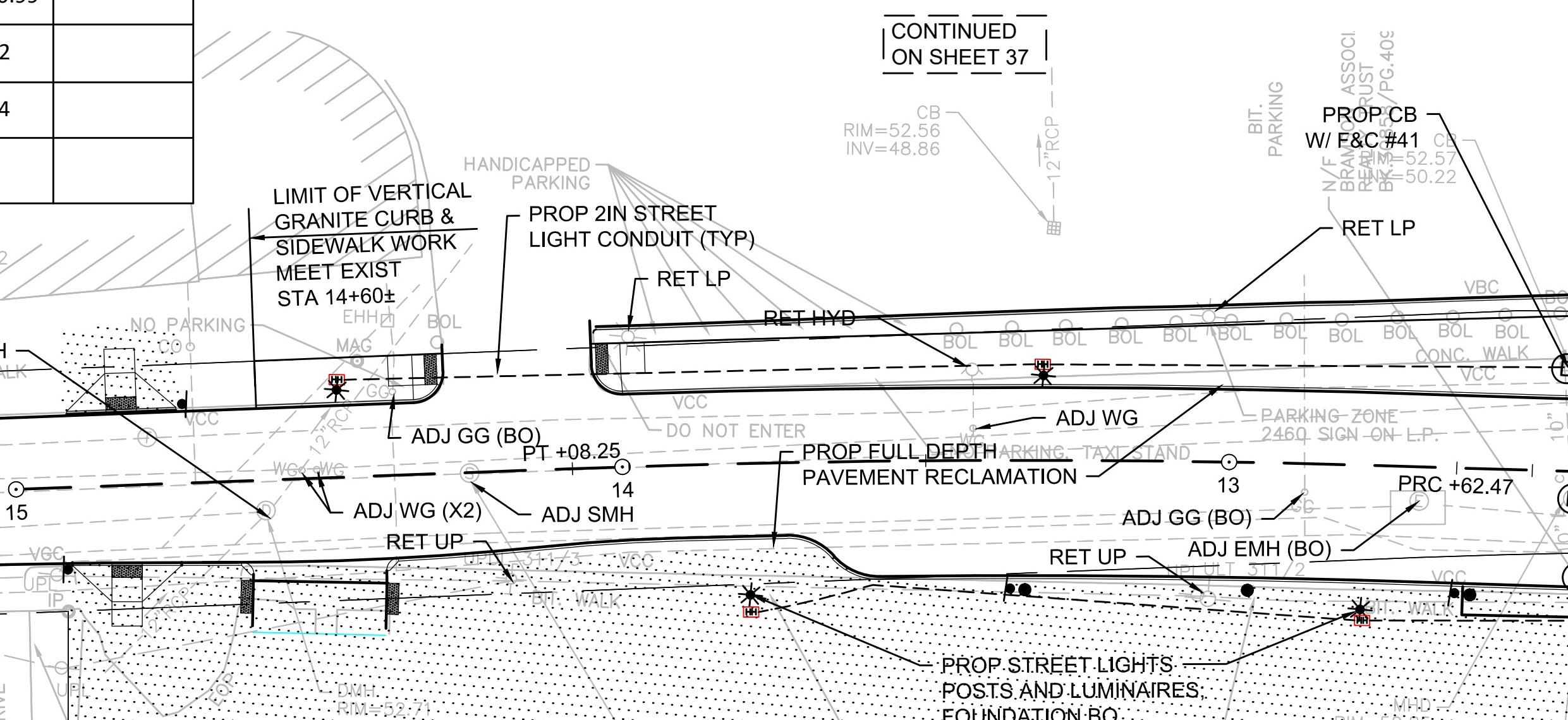
  1. ALL STATIONS AND OFFSETS ARE MEASURED AT THE CENTER OF STRUCTURES.
  2. ALL RIM AND INVERT INFORMATION IS BASED OFF TOPOGRAPHIC SURVEY. CONTRACTOR TO FIELD VERIFY ALL INFORMATION AND REPORT ANY INCONSISTENCIES TO THE ENGINEER FOR RESOLUTION.
  3. SANITARY STRUCTURES (SMH) BOLTED OR SEALED SHUT SHALL BE REPORTED TO THE CITY PRIOR TO REMOVING THE COVERS AS NEEDED TO PERFORM ADJACENT ROADWAY WORK.
  4. ALL DRAINAGE STRUCTURES AND PIPES PROPOSED TO BE RETAINED AND/OR UTILIZED WITHIN THE PROJECT LIMITS AND AS DIRECTED BY THE CITY SHALL BE CLEANED OF ALL SEDIMENT AND DEBRIS TO THE SATISFACTION OF THE CITY AND THE ENGINEER.
  5. TEST PITS IDENTIFIED WITHIN THE PLAN SET AND AS DIRECTED BY THE CITY AND/OR ENGINEER FOR PURPOSES OF VERIFYING POTENTIAL UTILITY CONFLICTS SHALL BE DONE BY VACUUM EXCAVATION ONLY, NO EXCEPTION TAKEN. CONTRACTOR SHALL TAKE SPECIAL CARE IN AREAS ADJACENT TO AC SEWER PIPES.



| CONTINUED  
| ON SHEET 3



**CONTINUED**  
**ON SHEET 37**



**FOR PROFILE SEE SHEET 26 & 26A  
FOR LANDSCAPING PLAN SEE SHEET 62  
FOR LIGHTING PLAN SEE SHEET 77**

CONTINUE



# Environmental Partners

**GROUP**

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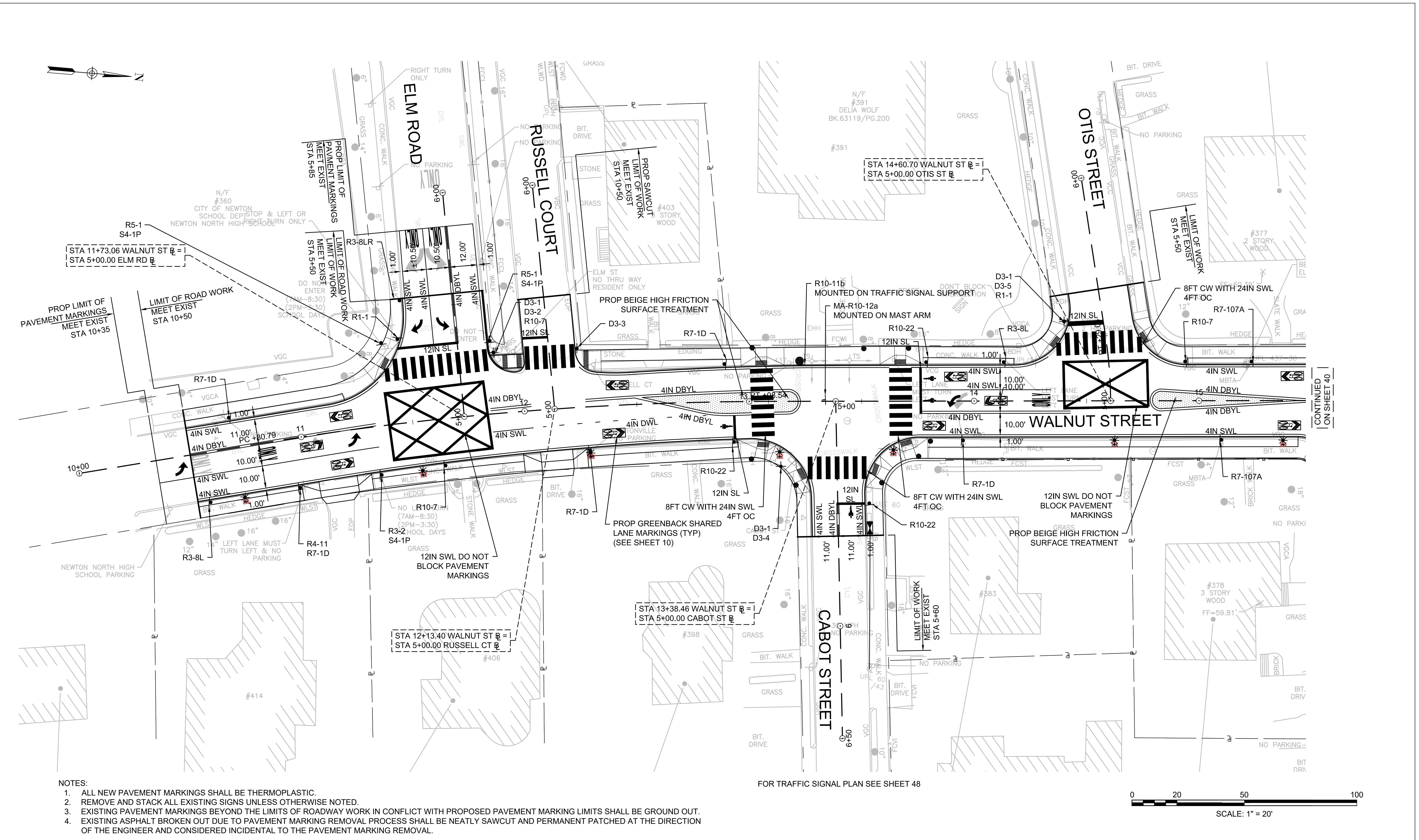
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	AUGUST 2019	
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/	KMB	
by	BLH	
d by	JDE	

# REHABILITATION OF WALNUT STREET NEWTON, MASSACHUSETTS

## **UTILITY PLAN- 04**

No.  
3



**Environmental Partners**  
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MARK	DATE	DESCRIPTION	Scale	AS NOTED
			Date	AUGUST 2019
			Job No.	R326-1605.00
			Designed by	JRC
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			Approved by	JDF

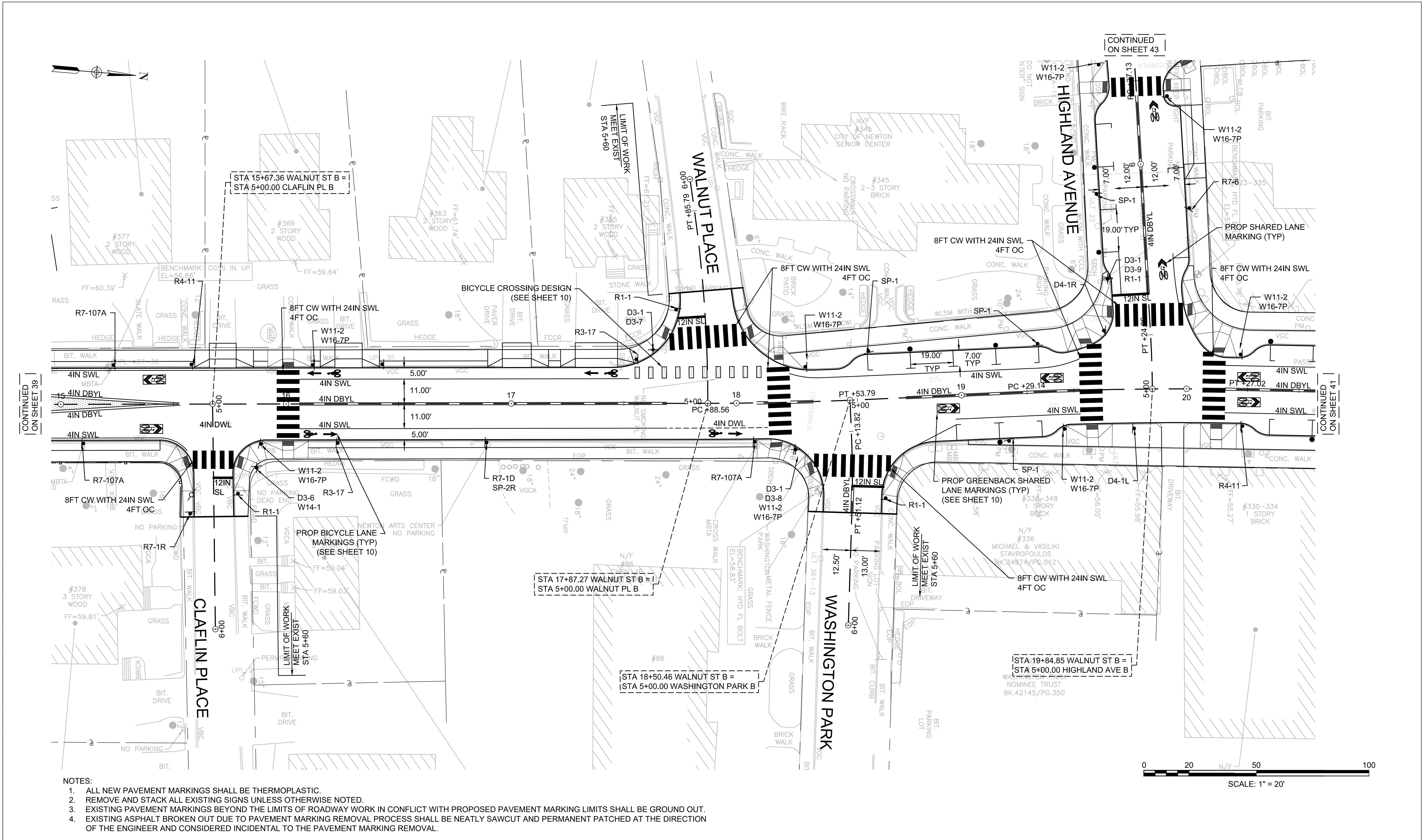
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### REHABILITATION OF WALNUT STREET NEWTON, MASSACHUSETTS

#### TRAFFIC SIGN AND PAVEMENT MARKING PLAN-01

Sheet No.  
**39**

AS NOTED



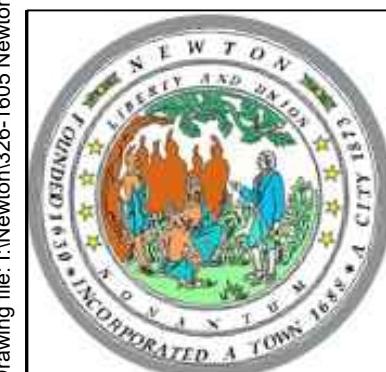
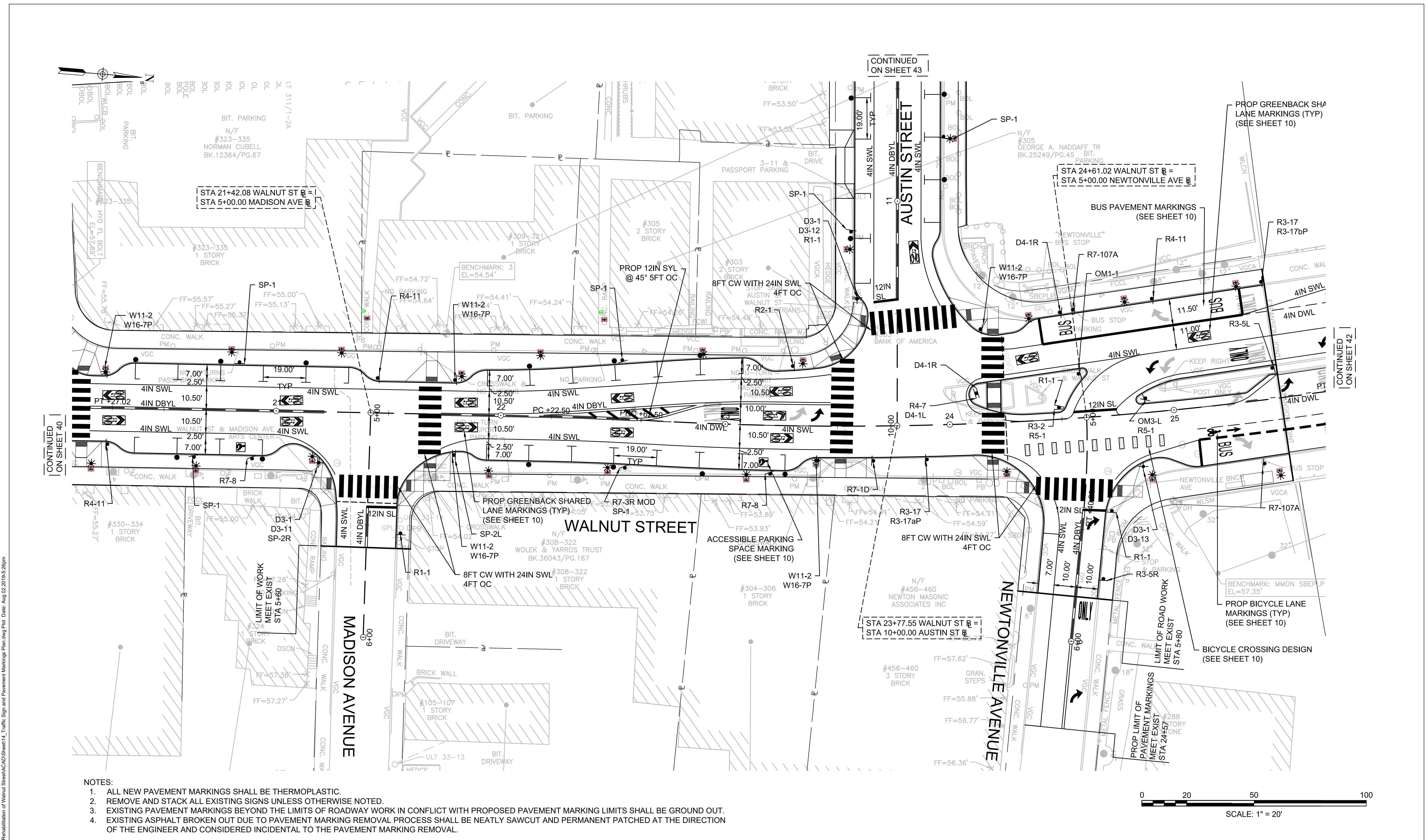
**Environmental Partners**  
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MARK	DATE	DESCRIPTION	Scale	AS NOTED	Sheet No.
			Date	AUGUST 2019	40
			Job No.	R326-1605.00	AS NOTED
			Designed by	JRC	
			Drawn by	AMF	
			Checked by	BLH	
			Approved by	JDF	

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**REHABILITATION OF WALNUT STREET**  
**NEWTON, MASSACHUSETTS**

**TRAFFIC SIGN AND PAVEMENT MARKING PLAN-02**



# Environmental Partners GROUP

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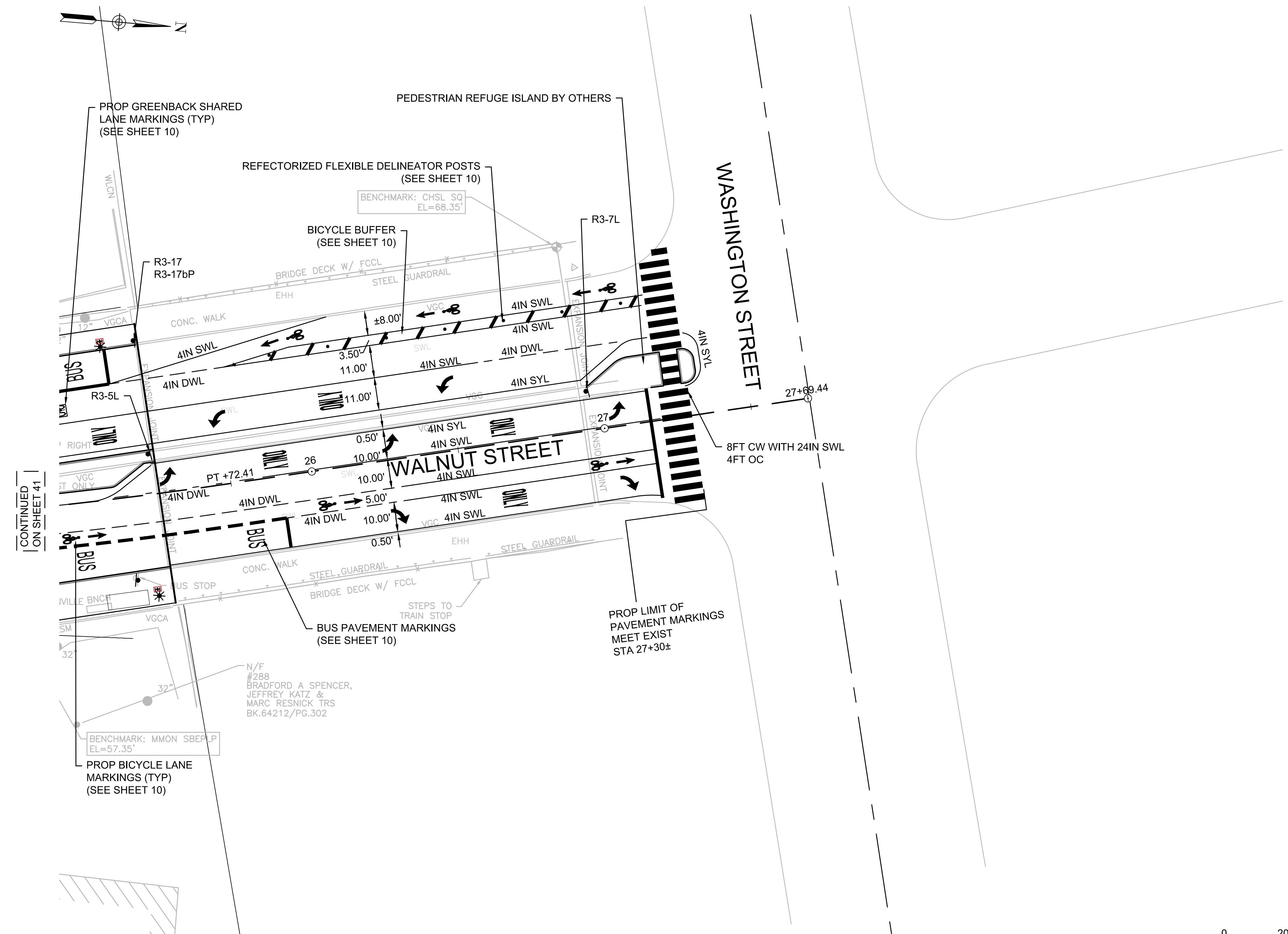
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			Drawn by	AMF	
			Checked by	BLH	
MARK	DATE	DESCRIPTION	Approved by	JDF	

# REHABILITATION OF WALNUT STREET NEWTON, MASSACHUSETTS

# TRAFFIC SIGN AND PAVEMENT MARKING PLAN- 03

41

AS NOTED



0 20 50 100  
SCALE: 1" = 20'



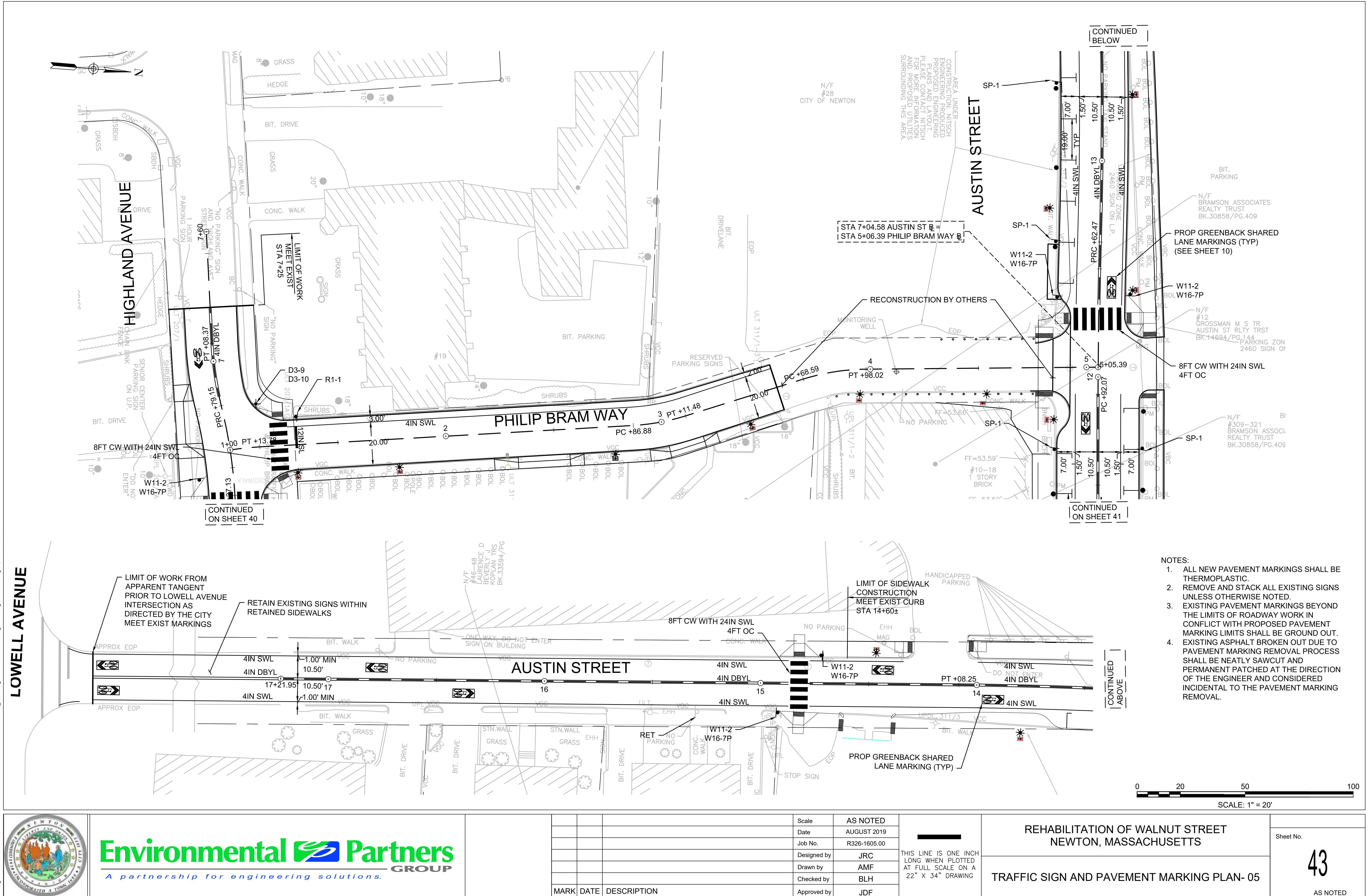
**Environmental Partners**  
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MARK	DATE	DESCRIPTION	Scale	AS NOTED
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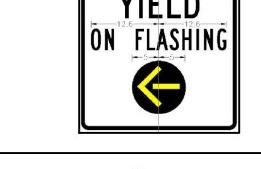
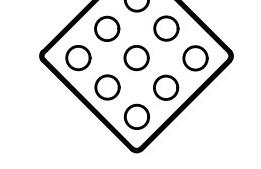
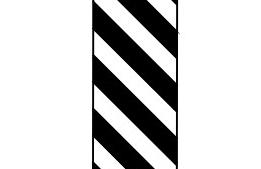
REHABILITATION OF WALNUT STREET  
NEWTON, MASSACHUSETTS  
TRAFFIC SIGN AND PAVEMENT MARKING PLAN- 04

Sheet No.  
42  
AS NOTED

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# TRAFFIC SIGN SUMMARY

IDENTIFICATION NUMBER	SIZE OF SIGN (INCHES)		TEXT	TEXT DIMENSIONS (INCHES)		NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE AND NUMBER REQUIRED	UNIT AREA IN SQUARE FEET	AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING		BACKGROUND	LEGEND	BORDER			
D3-1	VARIABLES	12		MUTCD STANDARD		9	MUTCD STANDARD			P5 (9)	EACH	EACH
D3-2	VARIABLES	12				1				MOUNT WITH D3-1 & R10-7 (1)	EACH	EACH
D3-3	VARIABLES	12				1				P5 (1)	EACH	EACH
D3-4	VARIABLES	12				1				MOUNT WITH D3-1 (1)	EACH	EACH
D3-5	VARIABLES	12				1				MOUNT WITH D3-1 & R1-1 (1)	EACH	EACH
D3-6	VARIABLES	12				1				P5 (1)	EACH	EACH
D3-7	VARIABLES	12				1				MOUNT WITH D3-1 (1)	EACH	EACH
D3-8	VARIABLES	12				1				MOUNT WITH D3-1 & W11-2 & W16-7P (1)	EACH	EACH
D3-9	VARIABLES	12				2				MOUNT WITH D3-1 & R1-1 (1); P5 (1)	EACH	EACH
D3-10	VARIABLES	12				1				MOUNT WITH D3-9 (1)	EACH	EACH
D3-11	VARIABLES	12				1				MOUNT WITH D3-1 & SP-2R (1)	EACH	EACH
D3-12	VARIABLES	12				1				MOUNT WITH R1-1 & D3-1 (1)	EACH	EACH
D3-13	VARIABLES	12				1				MOUNT WITH D3-1 (1)	EACH	EACH
D4-1L	30	24				2				MOUNT WITH R4-7 (1) & D4-1L; P5 (1)	5.00	10.00
D4-1R	30	24				3				MOUNT WITH R4-7 & D4-1L; P5 (2)	5.00	15.00
MA-R10-12a	30	36		MASSDOT STANDARD		1	MASSDOT STANDARD			MAINTAINED ON MASTARM	7.50	7.50
OM1-1	18	18		MUTCD STANDARD		1	MUTCD STANDARD			P5 (1)	2.25	2.25
OM3-L	12	36		MUTCD STANDARD		1	MUTCD STANDARD			P5 (1)	3.00	3.00

SEE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES 2009 EDITION WITH LATEST REVISIONS AND MASSACHUSETTS AMENDMENTS FOR LATEST SPECIFICATIONS ON TEXT DIMENSIONS AND COLOR.



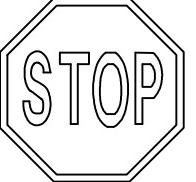
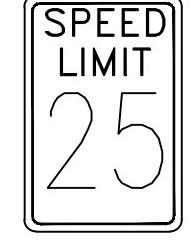
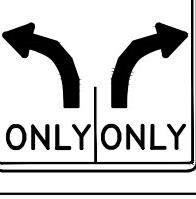
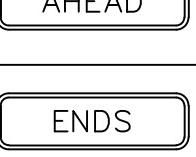
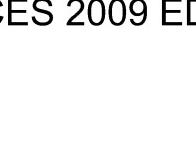
MARK	DATE	DESCRIPTION	Scale	NTS
			Date	AUGUST 2019
			Job No.	R326-1605.00
			Designed by	AMF
			Drawn by	AMF
			Checked by	JRC
			Approved by	JDF

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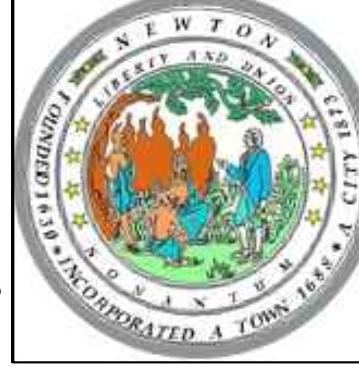
REHABILITATION OF WALNUT STREET  
NEWTON, MASSACHUSETTS  
TRAFFIC SIGN SUMMARY-01

Sheet No.  
44  
AS NOTED

# TRAFFIC SIGN SUMMARY

IDENTIFI-CATION NUMBER	SIZE OF SIGN (INCHES)		TEXT	TEXT DIMENSIONS (INCHES)		NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE AND NUMBER REQUIRED	UNIT AREA IN SQUARE FEET	
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING		BACK-GROUND	LEGEND	BORDER			
R1-1	30	30		MUTCD STANDARD		11	MUTCD STANDARD			MOUNT WITH D3-1 & D3-5 (1); D3-1 & D3-9 (1); D3-1 & D3-12 (1); R3-2 & R5-1 (1); P5 (7)	6.25	68.75
R2-1	18	24				1				P5 (1)	3.00	3.00
R3-2	24	24				2				P5 (2)	4.00	8.00
R3-5L	30	36				1				P5 (1)	7.50	7.50
R3-5R	30	36				1				P5 (1)	7.50	7.50
R3-7L	30	30				1				P5 (1)	6.25	6.25
R3-8L	30	30				2				P5 (2)	6.25	12.50
R3-8LR	30	30				1				P5 (1)	6.25	6.25
R3-17	24	18				4				P5 (4)	3.00	12.00
R3-17aP	24	8				1				MOUNT WITH R13-17 (1)	1.33	1.33
R3-17bP	24	8				1				MOUNT WITH R13-17 (1)	1.33	1.33

SEE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES 2009 EDITION WITH LATEST REVISIONS AND MASSACHUSETTS AMENDMENTS FOR LATEST SPECIFICATIONS ON TEXT DIMENSIONS AND COLOR.



MARK	DATE	DESCRIPTION	Scale	NTS
			Date	AUGUST 2019
			Job No.	R326-1605.00
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REHABILITATION OF WALNUT STREET  
NEWTON, MASSACHUSETTS  
TRAFFIC SIGN SUMMARY-02

# TRAFFIC SIGN SUMMARY

IDENTIFICATION NUMBER	SIZE OF SIGN (INCHES)		TEXT	TEXT DIMENSIONS (INCHES)		NUMBER OF SIGNS REQUIRED	COLOR		POST SIZE AND NUMBER REQUIRED	UNIT AREA IN SQUARE FEET	AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING		BACK-GROUND	LEGEND			
R4-7	24	30		MUTCD STANDARD	1	MUTCD STANDARD	P5 (1)	5.00	5.00		
R4-11	30	30			5		P5 (5)	6.25	31.25		
R5-1	30	30			4		MOUNT WITH OM3-L (1); R3-2 & R1-1 (1); P5 (2)	6.25	25.00		
R7-1D	12	18			7		MOUNT WITH R3-7L (1); P5 (6)	1.50	10.50		
R7-1R					1		P5 (1)	1.50	1.50		
R7-3R MOD	12	18			1		P5 (1)	1.50	1.50		
R7-6	12	18			1		P5 (1)	1.50	1.50		
R7-8	12	18			2		P5 (2)	1.50	3.00		
R7-107A	-	-		MBTA & MASSDOT STANDARDS	5	MBTA & MASSDOT STANDARDS	P5 (5)	-	-		
R10-7	24	30		MUTCD STANDARD	3	MUTCD STANDARD	MOUNT WITH D3-1 & D3-2 (1); P5 (2)	5.00	15.00		
R10-11b	24	24			1		MOUNT ON TRAFFIC SIGNAL SUPPORT (1)	4.00	4.00		
R10-22	12	18			3		P5 (3)	1.50	4.50		
S4-1P	24	10			3		MOUNT WITH R3-2 (1); R5-1 (2)	1.67	5.00		

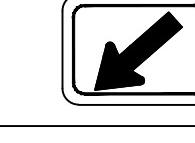
SEE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES 2009 EDITION WITH LATEST REVISIONS AND MASSACHUSETTS AMENDMENTS FOR LATEST SPECIFICATIONS ON TEXT DIMENSIONS AND COLOR.



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## TRAFFIC SIGN SUMMARY

IDENTIFI-CATION NUMBER	SIZE OF SIGN (INCHES)		TEXT	TEXT DIMENSIONS (INCHES)		NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE AND NUMBER REQUIRED	UNIT AREA IN SQUARE FEET	AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING		BACKGROUND	LEGEND	BORDER			
SP-1	-	-	PASSPORT PARKING ZONE 2460			14				MOUNT WITH R7-3R (1); P5 (13)	-	-
SP-2L	12	18			SPECIAL SIGN SEE SHEET 10	1				MOUNT WITH W11-2 & W16-7P (1)	1.50	1.50
SP-2R	12	18			SPECIAL SIGN SEE SHEET 10	2				MOUNT WITH D3-1 & D3-11 (1); R7-1D (1)	1.50	3.00
W11-2	30	30			MUTCD STANDARD	16				P5 (16)	6.25	100.00
W14-1	30	30				1				MOUNT WITH D3-6 (1)	6.25	6.25
W16-7P	24	12				16				MOUNT WITH W11-2 (15); D3-1 & D3-8 & W11-2 (1);	2.00	32.00

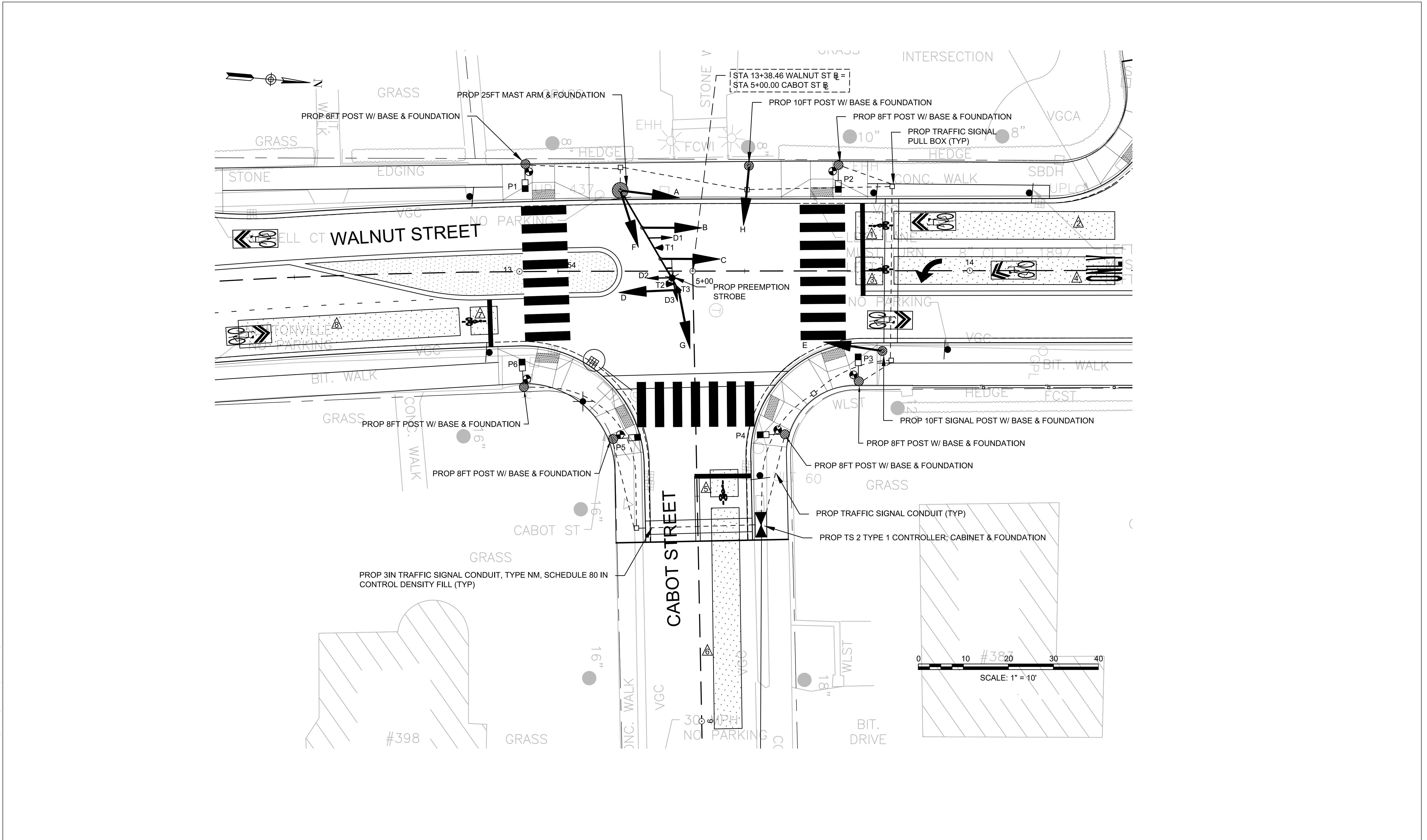
SEE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES 2009 EDITION WITH LATEST REVISIONS AND MASSACHUSETTS AMENDMENTS FOR LATEST SPECIFICATIONS ON TEXT DIMENSIONS AND COLOR.



MARK	DATE	DESCRIPTION	Approved by	JDF

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REHABILITATION OF WALNUT STREET  
NEWTON, MASSACHUSETTS  
TRAFFIC SIGN SUMMARY-04



**Environmental**  **Partners**  
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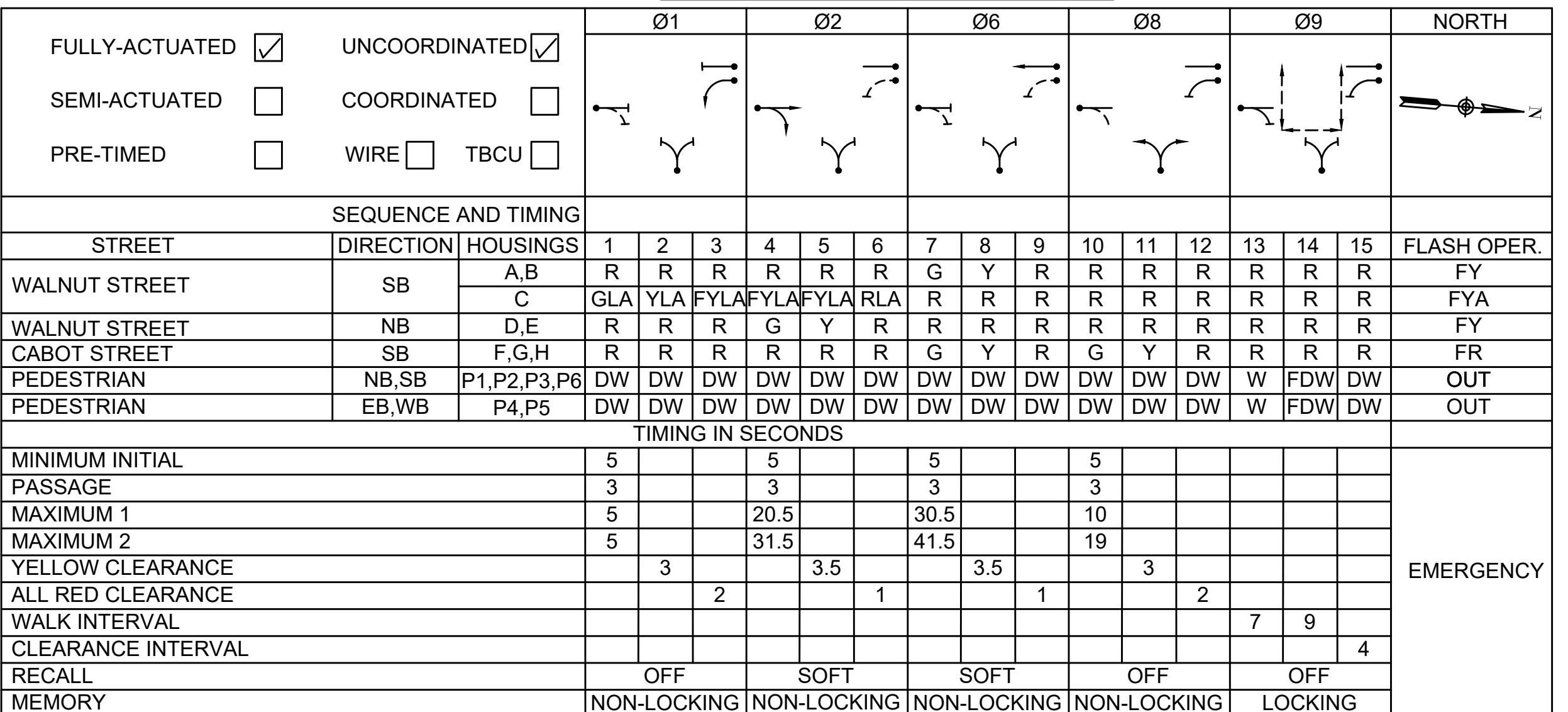
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			Date	JULY 2019
			Job No.	R326-1605.00
			Designed by	AMF
			Drawn by	AMF
			Checked by	JDF
			Approved by	JDF

REHABILITATION OF WALNUT STREET  
NEWTON, MASSACHUSETTS

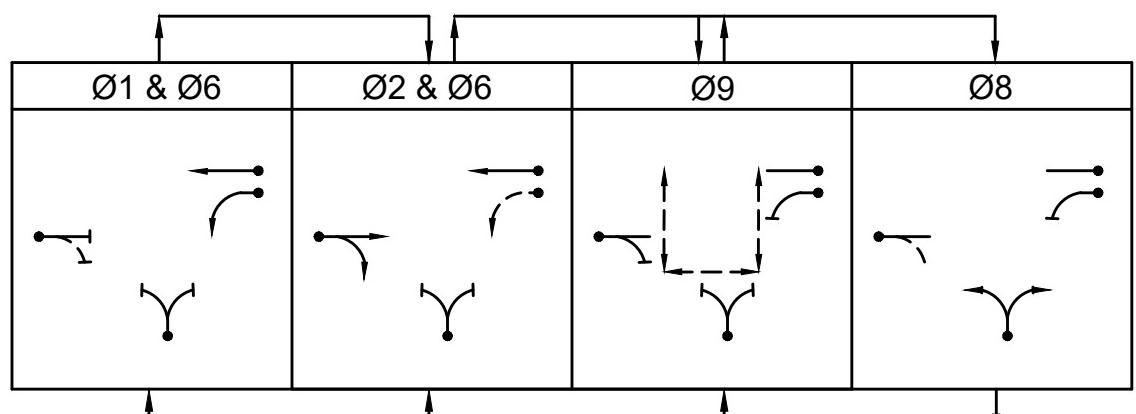
TRAFFIC SIGNAL PLAN - 01

Sheet No.  
**48**  
AS NOTED

PREFERENTIAL PHASE SEQUENCE DIAGRAM



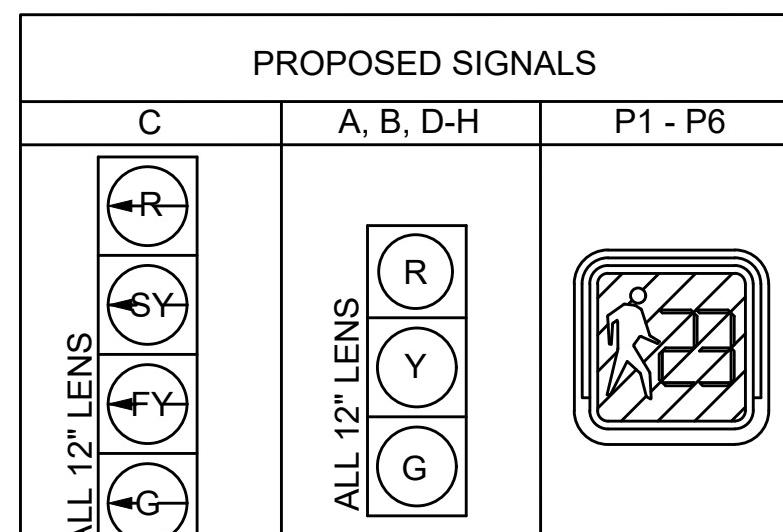
\* MAX 2 TO OPERATE MONDAY THRU FRIDAY 7-9AM & 3-7PM  
MAX 1 TO OPERATE ALL OTHER TIMES



PREFERENTIAL PHASE SEQUENCE DIAGRAM

TRAFFIC SIGNAL AND PHASING NOTES:

- IF THE ASSIGNED RIGHT-OF-WAY FOR ANY TRAFFIC MOVEMENT IS TO REMAIN IN EFFECT DURING THE NEXT CALLED PHASE THE SIGNAL INDICATIONS FOR THAT MOVEMENT WILL NOT CHANGE DURING THE CLEARANCE INTERVAL.
- IF THE ASSIGNED RIGHT-OF-WAY FOR ANY TRAFFIC MOVEMENT IS TO CHANGE DURING THE NEXT CALLED PHASE THE SIGNAL INDICATION FOR THAT TRAFFIC MOVEMENT WILL DISPLAY THE APPROPRIATE CLEARANCE INTERVAL.



1. ALL INDICATIONS SHALL BE L.E.D. LENSES IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS AND EQUIPPED WITH CAP VISORS.

2. ALL PEDESTRIAN INDICATIONS SHALL BE 16" COUNTDOWN L.E.D. AND BE EQUIPPED WITH SUN CAP VISORS.

3. ALL SIGNALS SHALL BE RIGIDLY MOUNTED AND EQUIPPED WITH 5" LOUVERED BACKPLATES WITH RETROREFLECTIVE BORDER.

PRE-EMPTION PHASING & PRIORITY			
DETECTOR & PRIORITY	PRE-EMPT PHASE ASSIGNMENT	MOVEMENT	VEHICLE PHASE ASSIGNMENT
D1	1		Ø1 & Ø6
D2	2		Ø2 & Ø6
D3	3		Ø8

EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE OPTICALLY TRANSMITTED BY OPTICAL EMITTERS MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT EACH INTERSECTION.

PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH DETECTORS 1, 2, OR 3 ASSIGNED DESCENDING PRIORITIES AS FOLLOWS: (1 HIGHEST AND 3 LOWEST)

IN RESPONSE TO A PRE-EMPTION SIGNAL RECEIVED AT AN INTERSECTION BY OPTICAL DETECTOR D1 (OR D2, D3) THE CONTROLLER SHALL HOLD OR ADVANCE TO AND HOLD IN EMERGENCY VEHICLE PRE-EMPTION PHASE #1 (OR #2, #3) GREEN FOR A MINIMUM OF TEN (10) SECONDS OR UNTIL PRE-EMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME PRE-EMPTION PHASE CLEARANCE (3 SECONDS: YELLOW AND 2 SECONDS ALL RED) AND SERVICE EMERGENCY VEHICLE PRE-EMPTION PHASE #2 (OR #1) IF NECESSARY, THEN TIME PHASE PRE-EMPTION CLEARANCE AND RESUME NORMAL SIGNAL OPERATION. EMERGENCY VEHICLE PRE-EMPTION PHASE #3 SHALL BE SIMILARLY SERVED.

MINIMUM GREEN, NORMAL VEHICLE CLEARANCE, SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.

OPTICAL PREEMPTION STROBE SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PRE-EMPTION GREEN IS ON.

ITEM 816.01

QUAN.	ITEM	TRAFFIC CONTROL SIGNALS MAJOR ITEMS REQUIRED
1	REMOVE AND STACK EXISTING TRAFFIC SIGNAL POSTS AND CAP CONDUIT; REMOVE AND DISPOSE OF FOUNDATIONS	
1	REMOVE AND STACK VEHICULAR AND PEDESTRIAN SIGNAL HEADS, PEDESTRIAN PUSH BUTTONS, EMERGENCY PRE-EMPTION EQUIPMENT, AND CONTROLLER	
1	25' MAST ARM STRUCTURE-TYPE II MONOLEVER & FOUNDATION*	
2	10' SIGNAL POST, BASE & FOUNDATION	
6	8' SIGNAL POST, BASE & FOUNDATION	
3	SIGNAL HEAD-1 WAY-3 SECTION-12" L.E.D. SIGNAL LENSES	
2	SIGNAL HEAD-2 WAY-3 SECTION-12" L.E.D. SIGNAL LENSES	
1	SIGNAL HEAD-1 WAY-4 SECTION-12" L.E.D. SIGNAL LENSES	
6	PEDESTRIAN SIGNAL HEAD - 16" COUNTDOWN L.E.D.	
6	PEDESTRIAN AUDIBLE & VIBRO-TACTILE PUSH BUTTON, SIGN & SADDLE WITH LED CONFIRMATION	
8	5" LOUVERED BACKPLATES WITH RETROREFLECTIVE BORDER	
6	12"x12" PULL BOX - SD2.031 (ITEM 811.31)	
1	TS CONTROLLER TYPE 1 WITH MONITOR AND CAPABILITY OF FUTURE INTERNAL ADAPTIVE CONTROL BY CYCLE/SPLIT/OFFSET	
1	SERVICE CONNECTION (OVERHEAD) (ITEM 813.80)	
1	VIDEO DETECTION SYSTEM (SCANNERS, INTERFACE BOARD, CAMERAS, EXTENSION ARMS, PROCESSOR & CABLES)	
1	EMERGENCY PRE-EMPTION SYSTEM INCLUDING STROBE, OPTICAL DETECTORS, AND PHASE SELECTORS	
1	GPS BASED EMERGENCY VEHICLE PRE-EMPTION SYSTEM	
1	MALFUNCTION MANAGEMENT UNIT	
1	BATTERY BACK UP SYSTEM	
1	REMOTE CONNECTION VIA CABLE MODEM	
	PLUS ALL MISC. EQUIPMENT, CABLE WIRING AND INCIDENTALS NECESSARY TO PROVIDE A COMPLETE OPERATING TRAFFIC CONTROL SIGNAL.	

\* STANDARD MAST ARMS CONFORMING TO MASSDOT REQUIREMENTS AND THE SPECIAL PROVISIONS SHALL BE INCLUDED UNDER ITEM 816.02

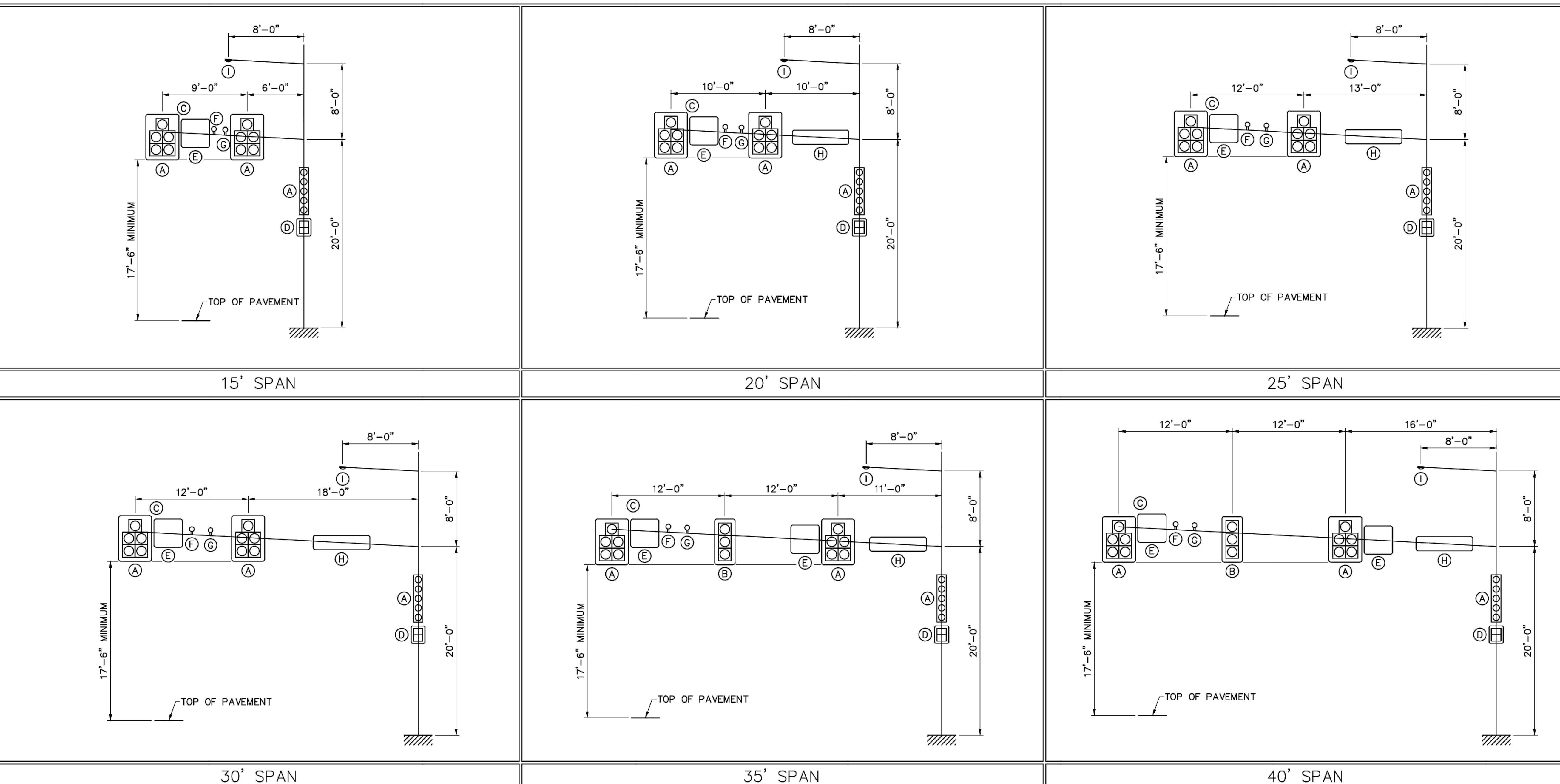
ITEM 816.01

EMERGENCY VEHICLE PRIORITY CONTROL SYSTEM LIST OF MAJOR ITEMS REQUIRED	
QUAN.	DESCRIPTION
1	OPTICOM 4-CHANNEL PHASE SELECTOR KIT (OPTICOM MODEL 754)
1	CONFIRMATION WHITE STROBE LIGHT
1	OPTICAL DETECTOR (UNIDIRECTIONAL) (OPTICOM MODEL 711)
1	OPTICAL DETECTOR (BI-DIRECTIONAL) (OPTICOM MODEL 722)
	PLUS ALL MISCELLANEOUS EQUIPMENT, CABLE AND INCIDENTAL MATERIAL NECESSARY TO PROVIDE A COMPLETE OPERATING CONTROL SYSTEM.



MARK	DATE	DESCRIPTION	Scale	N/A
			Date	JULY 2019
			Job No.	R326-1605.00
			Designed by	AMF
			Drawn by	AMF
			Checked by	JDF
			Approved by	JDF

THIS LINE IS ONE INCH LONG WHEN PLOTTED AT FULL SCALE ON A 22" X 34" DRAWING



DESIGN LOADING							
DEVICE	DESCRIPTION	PROJ. AREA (FT <sup>2</sup> )	WEIGHT (LBS)	DEVICE	DESCRIPTION	PROJ. AREA (FT <sup>2</sup> )	WEIGHT (LBS)
(A)	5 SECTION, 1 WAY SIGNAL	13.33	110	(F)	DETECTOR	1.00	10
(B)	3 SECTION, 1 WAY SIGNAL	8.67	74	(G)	STROBE	1.00	10
(C)	DAMPENER PLATE (NOT SHOWN)	0.00	9	(H)	72" X 18" STREET NAME SIGN	9.00	12
(D)	DUAL PEDESTRIAN SIGNAL	8.00	80	(I)	OPTIONAL LUMINAIRE	3.30	75
(E)	36" X 36" REGULATORY SIGN	9.00	12				

NOTE: ALL SIGNALS HAVE 5.0" NON-LOUVERED BACKPLATES WITH REFLECTIVE BORDERS

**massDOT**  
 Massachusetts Department of Transportation  
 Highway Division  
**STANDARD DRAWINGS**  
 OVERHEAD SIGNAL STRUCTURE & FOUNDATION  
 15' - 40' ARM  
 LOAD DIAGRAMS  
 MASSACHUSETTS DEPARTMENT OF TRANSPORTATION  
 HIGHWAY DIVISION  
 10 PARK PLAZA BOSTON, MASS  
 DECEMBER, 2015

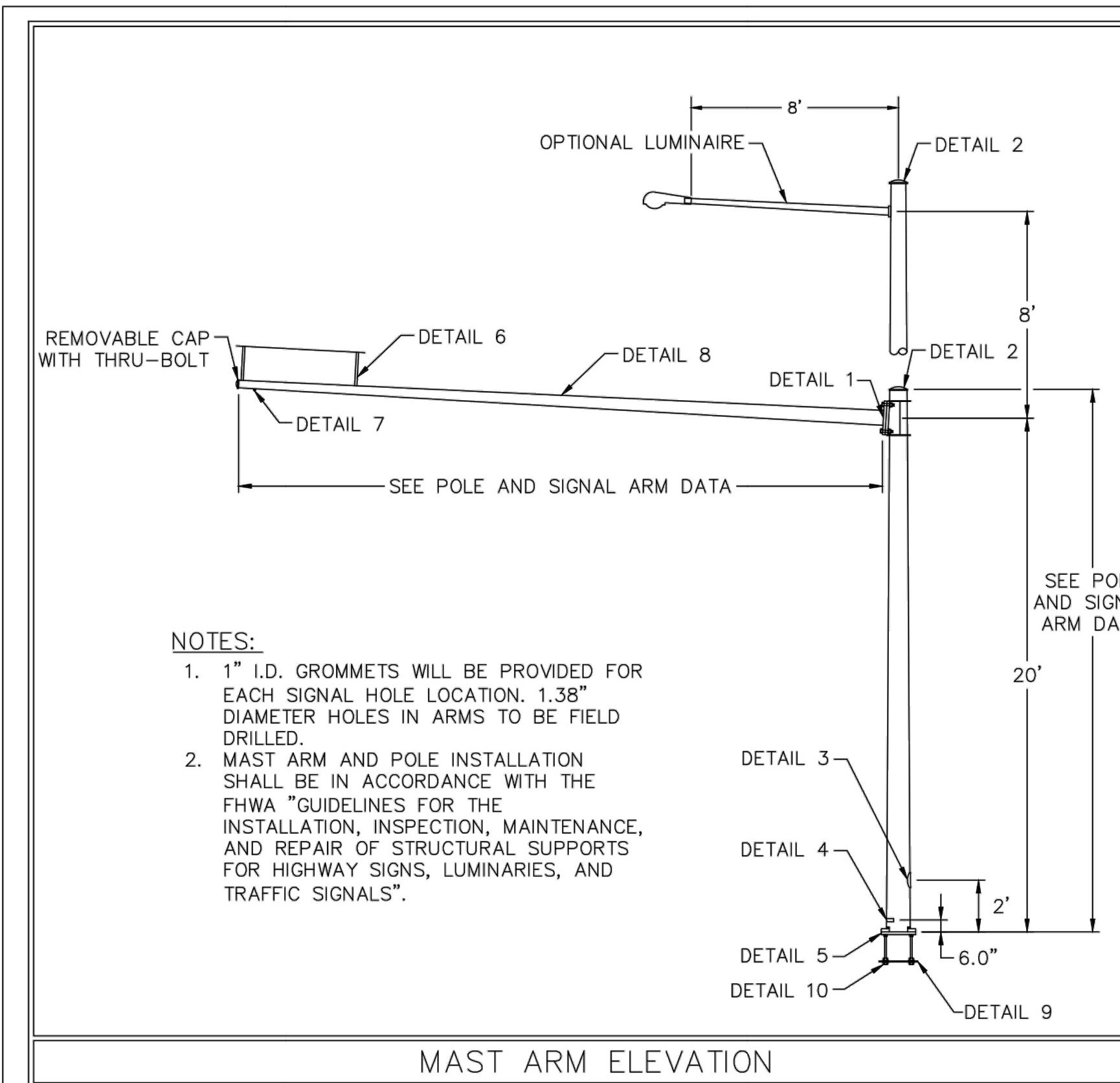
SHEET 2 OF 7 SHEETS



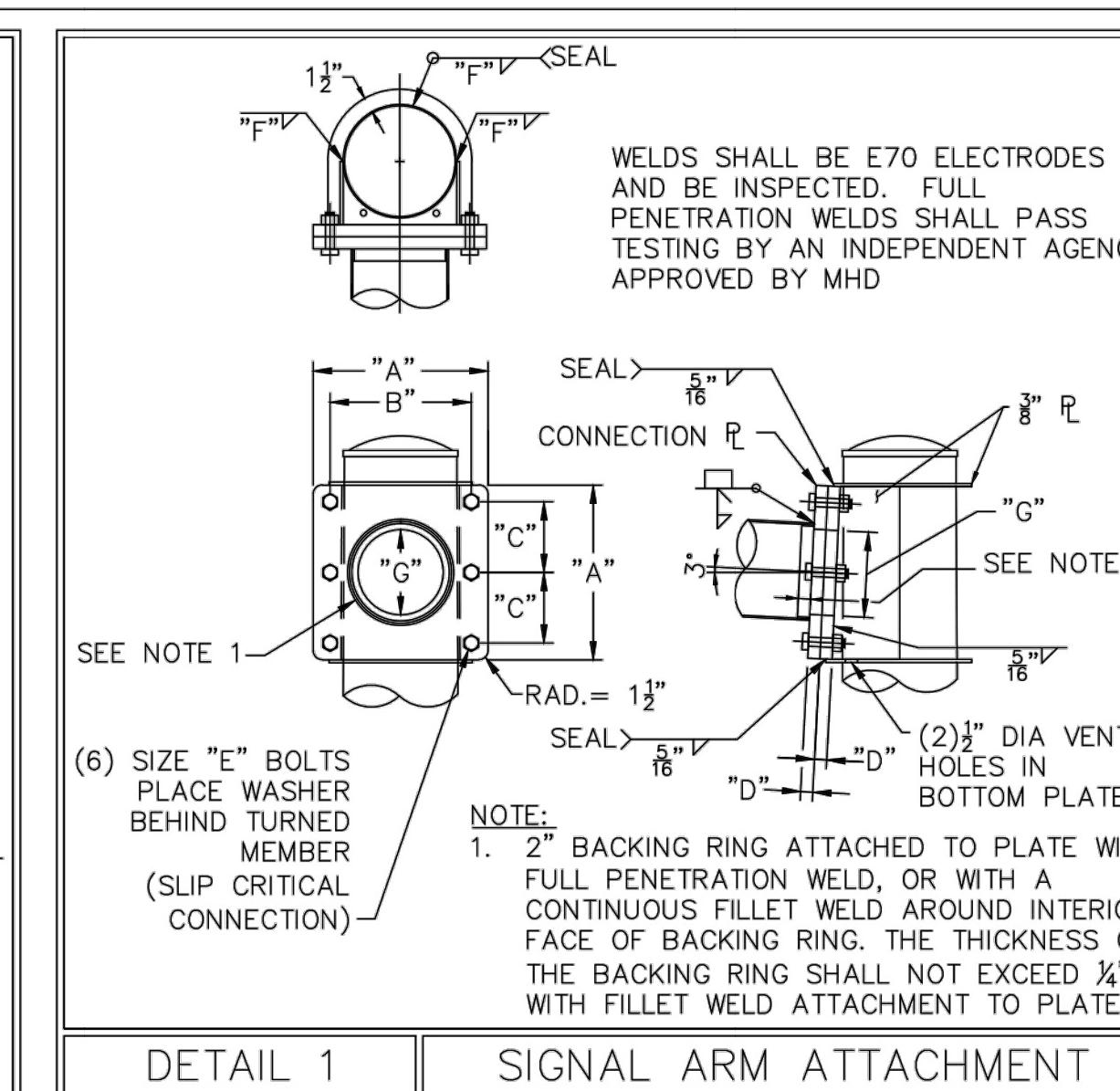
MARK	DATE	DESCRIPTION	Scale	N/A
			Date	AUGUST 2019
			Job No.	R326-1605.00
			Designed by	BLH
			Drawn by	AMT
			Checked by	JDF
			Approved by	JDF

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 LONG WHEN PLOTTED  
 AT FULL SCALE ON A  
 22" X 34" DRAWING

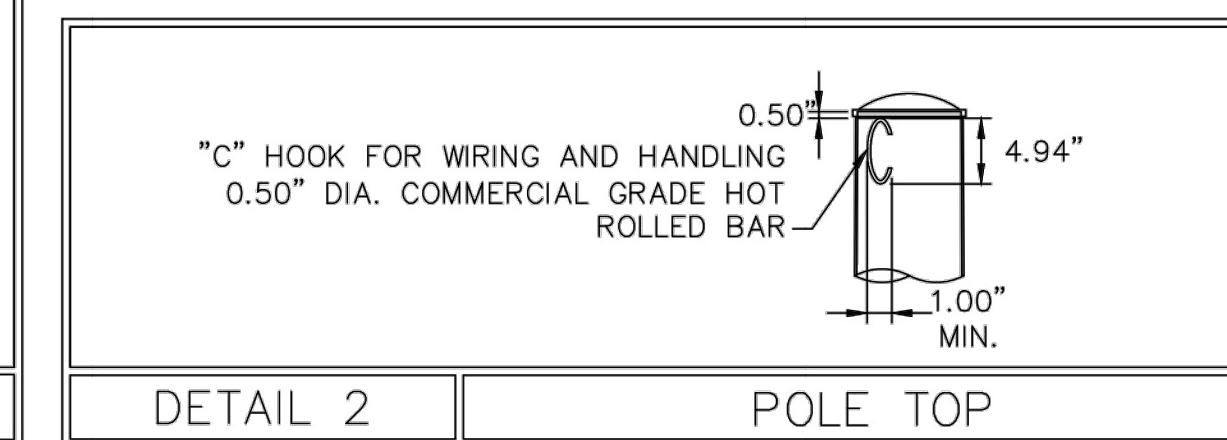
**REHABILITATION OF WALNUT STREET**  
 NEWTON, MASSACHUSETTS  
**TRAFFIC SIGNAL MAST ARM DETAILS - 01**



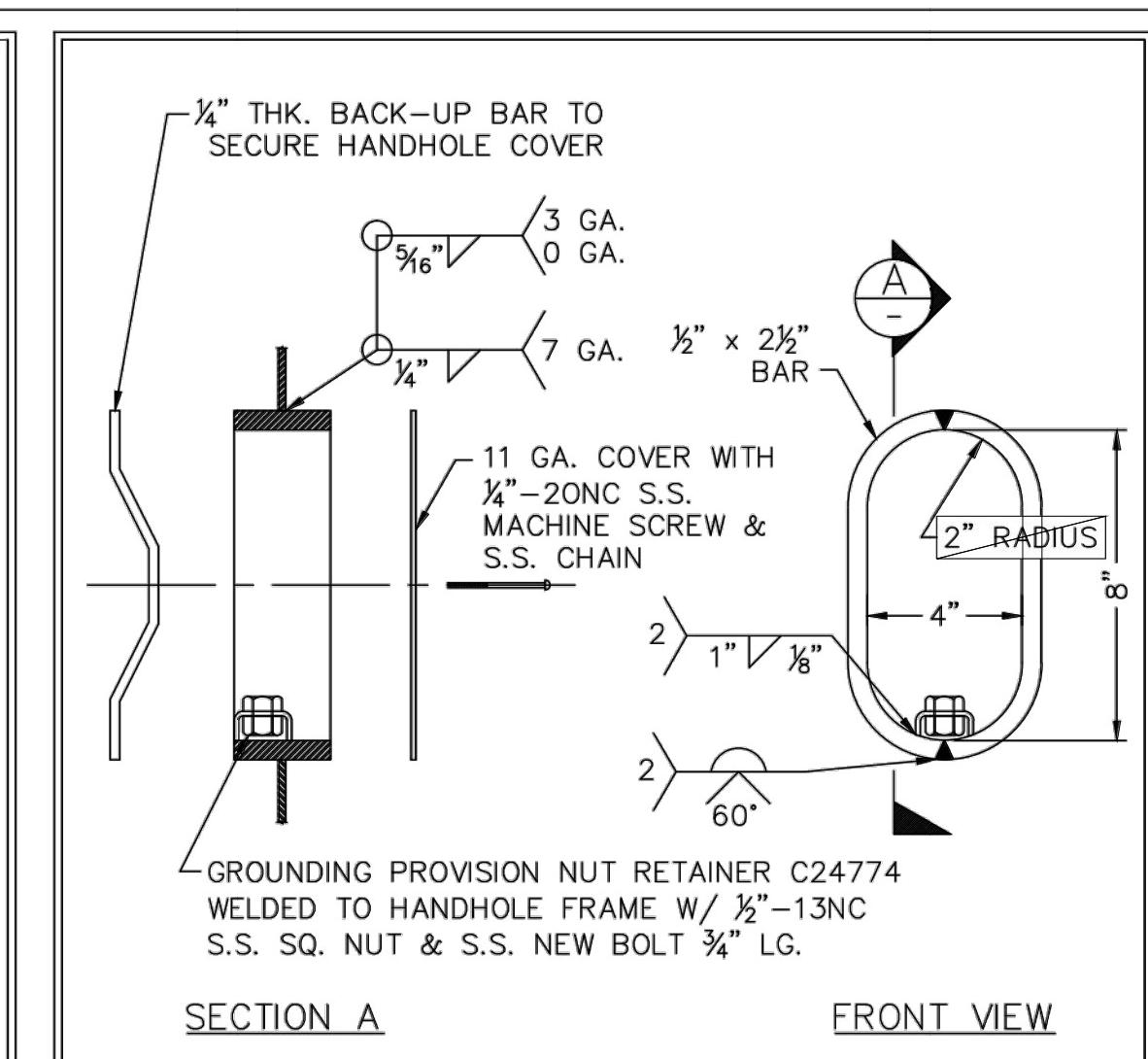
MAST ARM ELEVATION



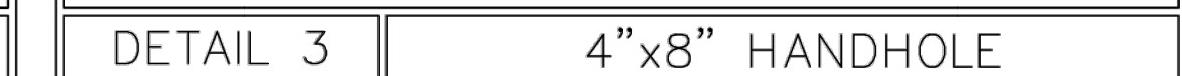
DETAIL 1 SIGNAL ARM ATTACHMENT



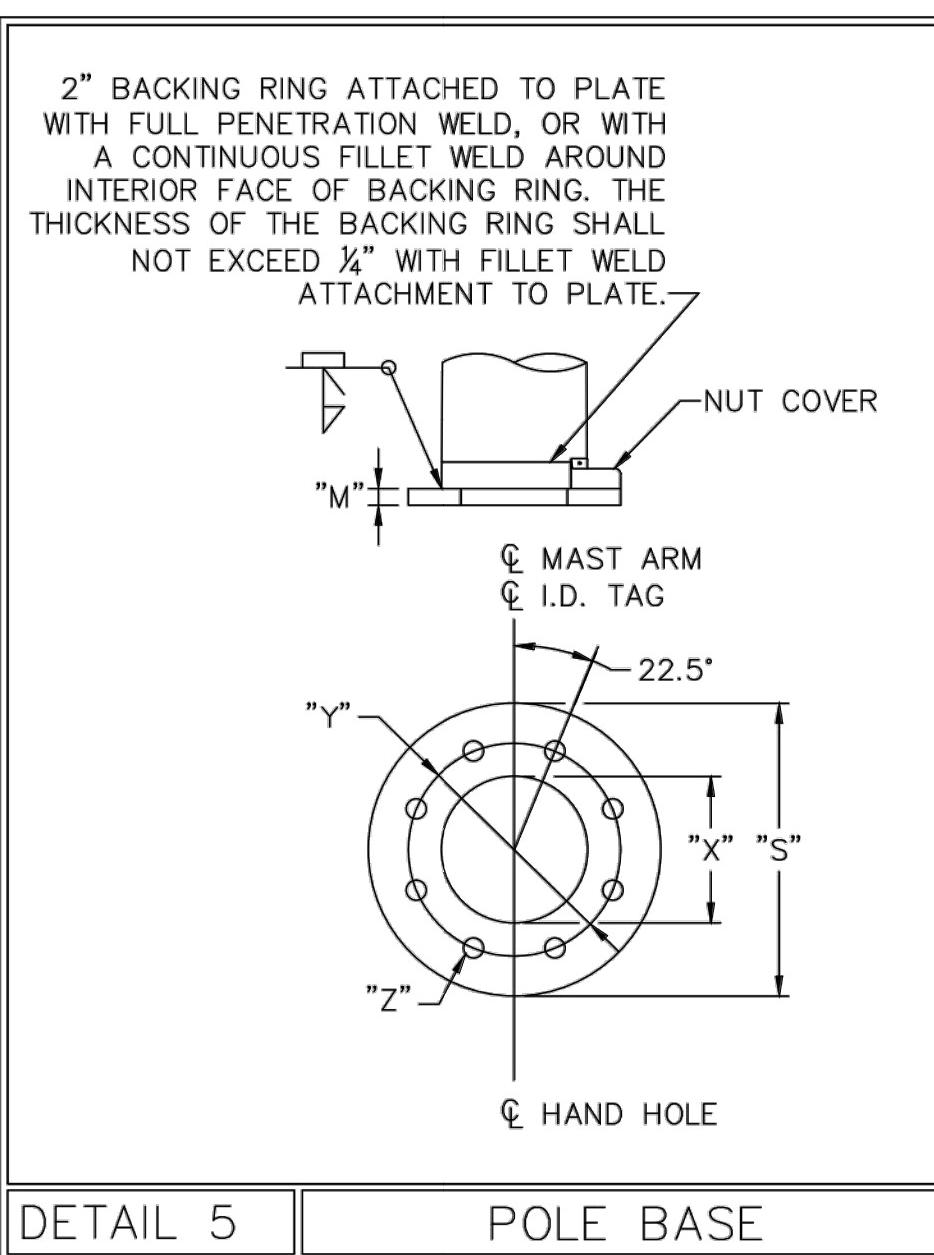
DETAIL 2 POLE TOP



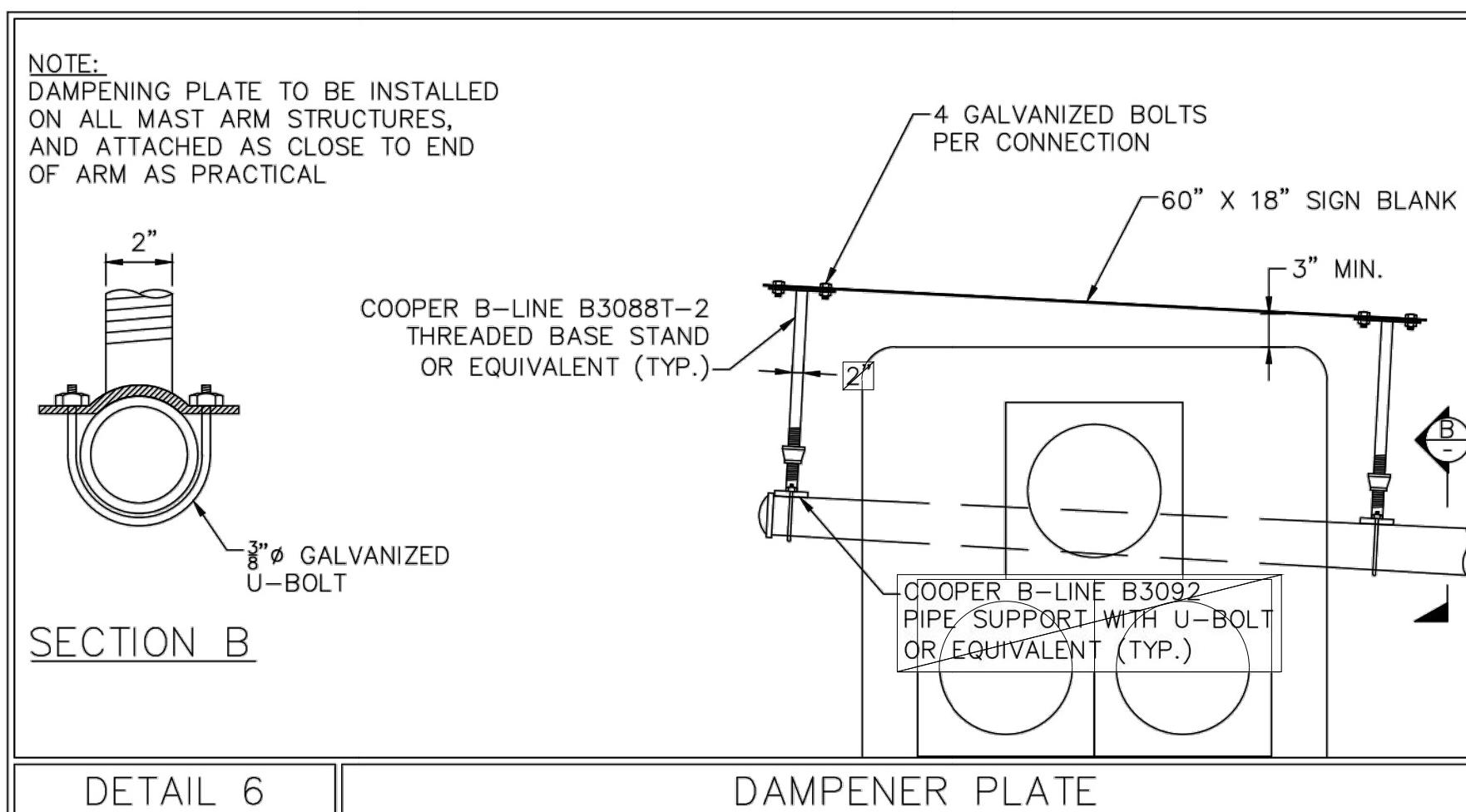
SECTION A FRONT VIEW



DETAIL 4 I.D. TAG

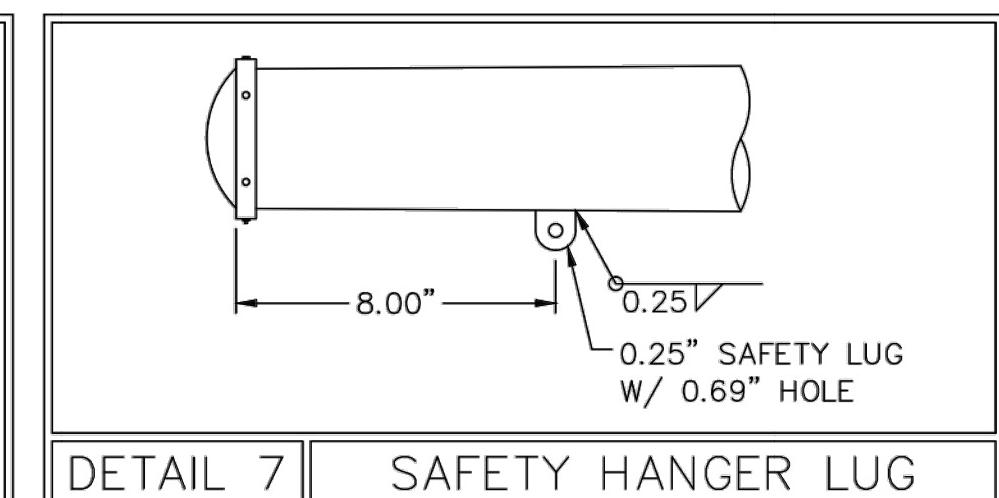


DETAIL 5 POLE BASE

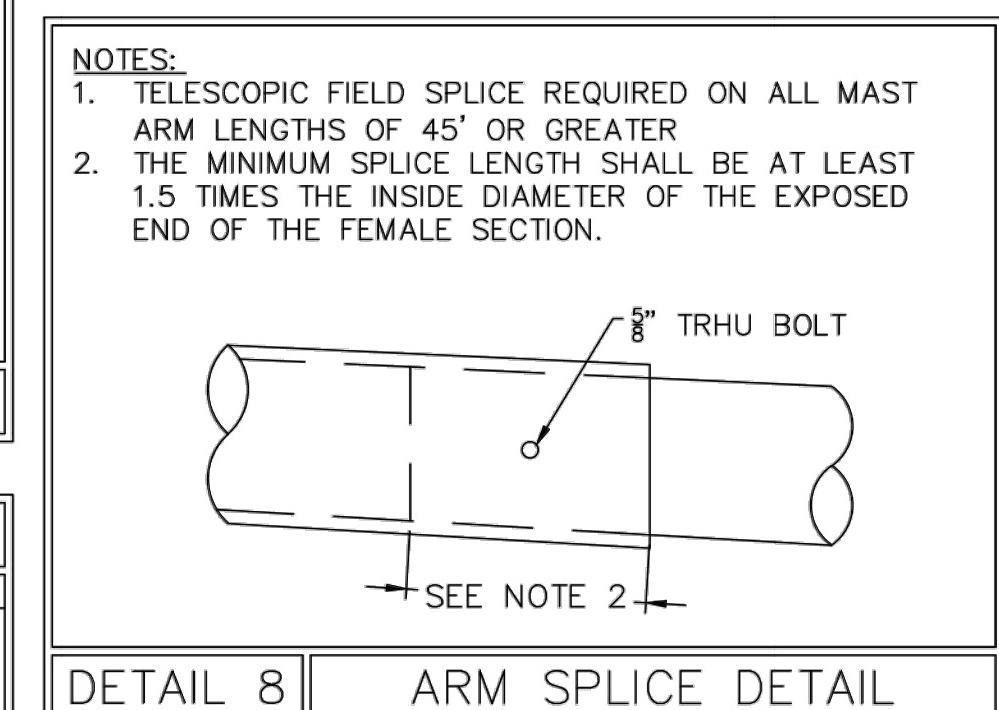


SECTION B

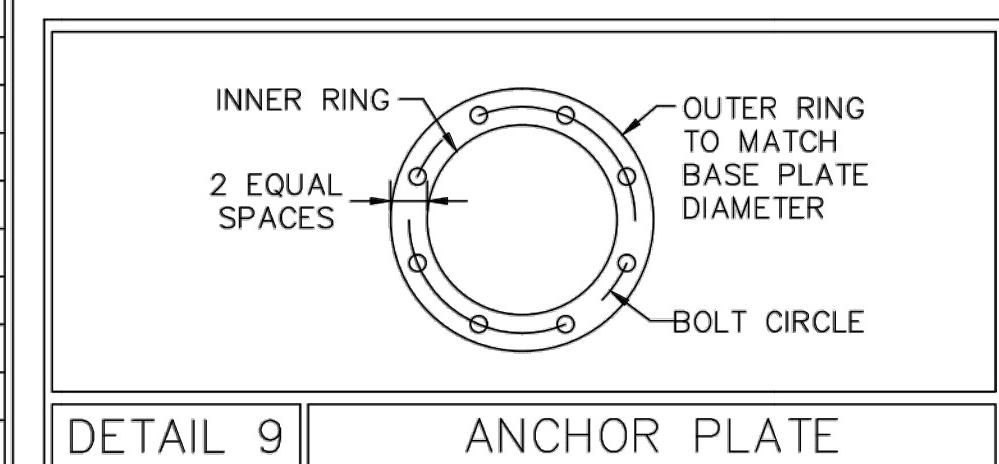
DETAIL 6 DAMPENER PLATE



DETAIL 7 SAFETY HANGER LUG



DETAIL 8 ARM SPLICE DETAIL



DETAIL 9 ANCHOR PLATE



STANDARD DRAWINGS  
OVERHEAD SIGNAL STRUCTURE & FOUNDATION  
MAST ARM DETAILS

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION  
HIGHWAY DIVISION  
10 PARK PLAZA BOSTON, MASS

DECEMBER, 2015

SHEET 4 OF 7 SHEETS



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MARK	DATE	DESCRIPTION	Scale	N/A
			Date	AUGUST 2019
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22" X 34" DRAWING

REHABILITATION OF WALNUT STREET  
NEWTON, MASSACHUSETTS

TRAFFIC SIGNAL MAST ARM DETAILS - 02

Sheet No.  
**50**  
AS NOTED

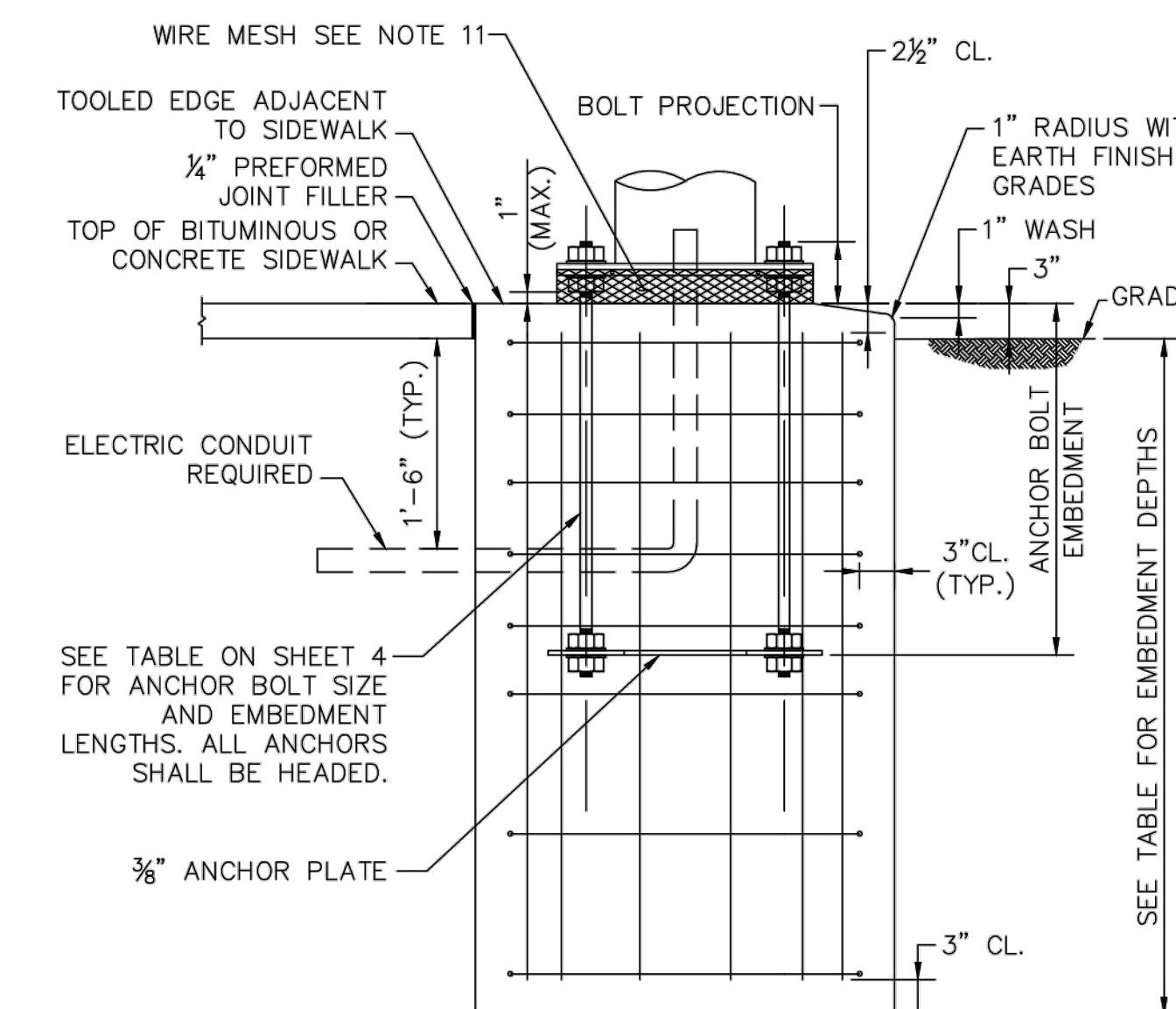
PIER FOUNDATIONS FOR 110 MPH WIND SPEED ZONE																					
SOIL TYPE	15' & 20' MAST ARMS				25' & 30' MAST ARMS				35' & 40' MAST ARMS				45' & 50' MAST ARMS				55' & 60' MAST ARMS				
	DIAMETER	DEPTH	VERT. BARS	TIE BARS	DIAMETER	DEPTH	VERT. BARS	TIE BARS	DIAMETER	DEPTH	VERT. BARS	TIE BARS	DIAMETER	DEPTH	VERT. BARS	TIE BARS	DIAMETER	DEPTH	VERT. BARS	TIE BARS	
DRY SAND (LOOSE)	3'-6"	8'-6"	18-#8 #5 @ 12"	3'-6"	9'-0"	18-#8 #5 @ 12"	3'-6"	11'-6"	18-#8 #5 @ 9"	4'-0"	12'-0"	18-#9 #5 @ 9"	4'-6"	13'-0"	18-#10 #5 @ 6"						
DRY SAND (DENSE)	3'-6"	7'-6"	18-#8 #5 @ 12"	3'-6"	7'-6"	18-#8 #5 @ 12"	3'-6"	8'-6"	18-#8 #5 @ 9"	4'-0"	9'-0"	18-#9 #5 @ 9"	4'-6"	9'-6"	18-#10 #5 @ 6"						
WET SAND (LOOSE)	3'-6"	9'-6"	18-#8 #5 @ 12"	3'-6"	11'-6"	18-#8 #5 @ 12"	3'-6"	14'-6"	18-#8 #5 @ 9"	4'-0"	15'-6"	18-#9 #5 @ 9"	4'-6"	16'-6"	18-#10 #5 @ 6"						
WET SAND (DENSE)	3'-6"	8'-6"	18-#8 #5 @ 12"	3'-6"	9'-0"	18-#8 #5 @ 12"	3'-6"	10'-6"	18-#8 #5 @ 9"	4'-0"	11'-6"	18-#9 #5 @ 9"	4'-6"	12'-0"	18-#10 #5 @ 6"						
CLAY (SOFT TO MEDIUM STIFF)	3'-6"	12'-0"	18-#8 #5 @ 12"	3'-6"	12'-0"	18-#8 #5 @ 12"	3'-6"	13'-0"	18-#8 #5 @ 9"	4'-0"	14'-0"	18-#9 #5 @ 9"	4'-6"	15'-6"	18-#10 #5 @ 6"						
CLAY (STIFF)	3'-6"	10'-6"	18-#8 #5 @ 12"	3'-6"	10'-6"	18-#8 #5 @ 12"	3'-6"	11'-0"	18-#8 #5 @ 9"	4'-0"	12'-0"	18-#9 #5 @ 9"	4'-6"	13'-6"	18-#10 #5 @ 6"						

PIER FOUNDATIONS FOR 130 MPH WIND SPEED ZONE																					
SOIL TYPE	15' & 20' MAST ARMS				25' & 30' MAST ARMS				35' & 40' MAST ARMS				45' & 50' MAST ARMS				55' & 60' MAST ARMS				
	DIAMETER	DEPTH	VERT. BARS	TIE BARS	DIAMETER	DEPTH	VERT. BARS	TIE BARS	DIAMETER	DEPTH	VERT. BARS	TIE BARS	DIAMETER	DEPTH	VERT. BARS	TIE BARS	DIAMETER	DEPTH	VERT. BARS	TIE BARS	
DRY SAND (LOOSE)	3'-6"	10'-0"	18-#8 #5 @ 12"	3'-6"	10'-6"	18-#8 #5 @ 12"	3'-6"	13'-6"	18-#8 #5 @ 8"	4'-0"	14'-6"	18-#9 #5 @ 6"	4'-6"	15'-6"	18-#10 #5 @ 5"						
DRY SAND (DENSE)	3'-6"	8'-6"	18-#8 #5 @ 12"	3'-6"	9'-0"	18-#8 #5 @ 12"	3'-6"	10'-0"	18-#8 #5 @ 8"	4'-0"	11'-0"	18-#9 #5 @ 6"	4'-6"	11'-6"	18-#10 #5 @ 5"						
WET SAND (LOOSE)	3'-6"	11'-6"	18-#8 #5 @ 12"	3'-6"	13'-6"	18-#8 #5 @ 12"	3'-6"	17'-0"	18-#8 #5 @ 8"	4'-0"	18'-6"	18-#9 #5 @ 6"	4'-6"	19'-6"	18-#10 #5 @ 5"						
WET SAND (DENSE)	3'-6"	10'-0"	18-#8 #5 @ 12"	3'-6"	10'-0"	18-#8 #5 @ 12"	3'-6"	12'-6"	18-#8 #5 @ 8"	4'-0"	13'-6"	18-#9 #5 @ 6"	4'-6"	14'-6"	18-#10 #5 @ 5"						
CLAY (SOFT TO MEDIUM STIFF)	3'-6"	12'-6"	18-#8 #5 @ 12"	3'-6"	13'-0"	18-#8 #5 @ 12"	3'-6"	14'-0"	18-#8 #5 @ 8"	4'-0"	16'-0"	18-#9 #5 @ 6"	4'-6"	17'-6"	18-#10 #5 @ 5"						
CLAY (STIFF)	3'-6"	11'-0"	18-#8 #5 @ 12"	3'-6"	11'-0"	18-#8 #5 @ 12"	3'-6"	12'-0"	18-#8 #5 @ 8"	4'-0"	13'-0"	18-#9 #5 @ 6"	4'-6"	14'-0"	18-#10 #5 @ 5"						

BASIS OF DESIGN	
ALL MAST ARM STRUCTURES AND FOUNDATIONS ARE DESIGNED IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, SIXTH EDITION 2013, AND THE FOLLOWING PARAMETERS:	
OVERTURNING DESIGN	FOUNDATIONS ARE SIZED TO RESIST OVERTURNING ACCORDING TO BROMS' DESIGN METHOD WITH A SAFETY FACTOR THAT INCLUDES AN OVERLOAD FACTOR OF 2.0 AND A SOIL UNDERSTRENGTH FACTOR OF 0.7.
SOIL PARAMETERS	UNIT WEIGHT LOOSE DRY SAND: $\gamma = 102 \text{ PCF}$ DENSE DRY SAND: $\gamma = 116 \text{ PCF}$ LOOSE WET SAND: $\gamma = 125 \text{ PCF}$ DENSE WET SAND: $\gamma = 135 \text{ PCF}$ SOFT TO MEDIUM STIFF CLAY: $\gamma = 113 \text{ PCF}$ STIFF CLAY: $\gamma = 120 \text{ PCF}$ FRICTION ANGLE $\phi = 33^\circ$ $\phi = 39^\circ$ UNIT WEIGHT SOIL SHEAR STRENGTH $S_u = 1.0 \text{ KSF}$ $S_u = 1.9 \text{ KSF}$
DEFLECTION LIMITS	MAXIMUM LATERAL DEFLECTION AT TOP OF MAST ARM FOUNDATION SHAFTS: $\frac{1}{2}"$

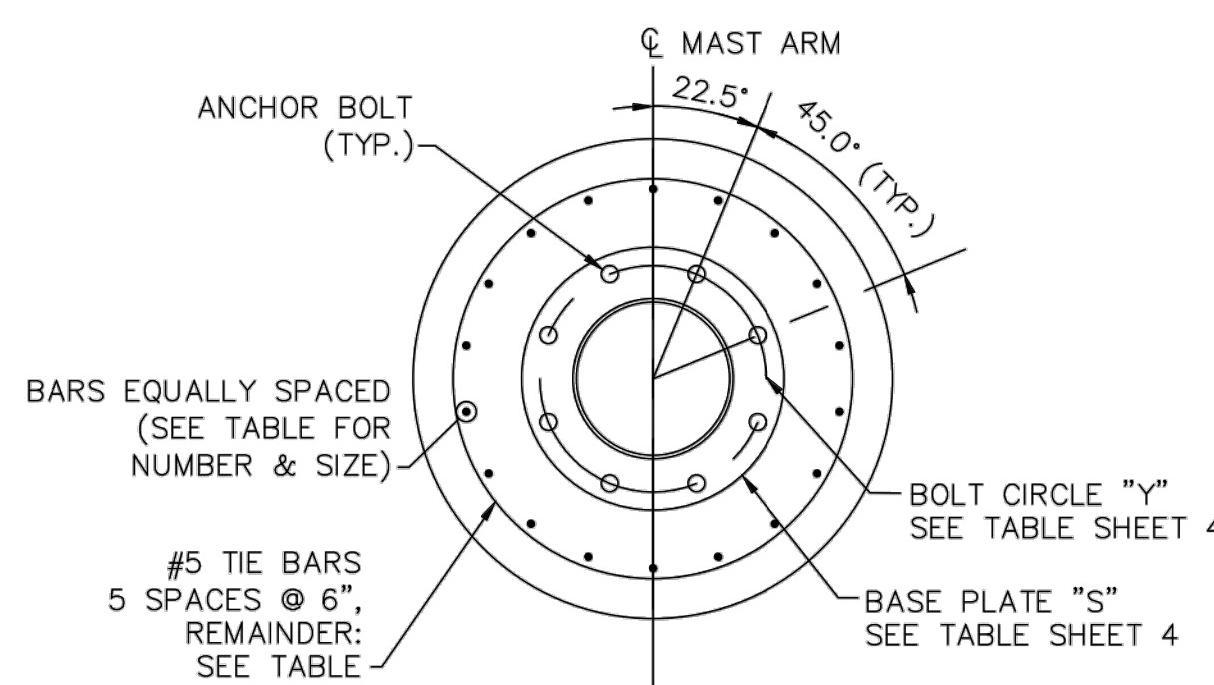
## NOTES:

- FOUNDATIONS SHALL BE 4000 PSI, 565 MASSDOT APPROVED MIX DESIGN.
- FOUNDATIONS SHALL BE INSTALLED IN ACCORDANCE WITH MASSDOT STANDARD SPECIFICATIONS ITEM 945 – DRILLED SHAFTS
- REINFORCEMENT SHALL BE ASTM A615 GRADE 60.
- ANCHOR BOLTS SHALL BE SET BY TEMPLATE.
- PROVIDE FOR ELECTRICAL CONDUIT.
- EXCAVATION SHALL BE BY THE AUGER METHOD TO THE NEAT LINES OF THE OUTSIDE DIMENSION OF THE FOUNDATIONS WITHOUT DISTURBING THE SOIL AROUND AND BELOW THE PROPOSED FOUNDATION BOTTOM. ALTERNATE METHODS OF EXCAVATION MAY BE SUBMITTED TO MASSDOT FOR APPROVAL IF THEY MEET THE REQUIREMENTS LISTED IN NOTES 6, 7, AND 8.
- THE EARTH WALLS OF THE FOUNDATION SHALL BE ADEQUATELY AND SECURELY PROTECTED AT ALL TIMES AGAINST CAVE-INS, DISPLACEMENT OF THE SURROUNDING EARTH AND FOR THE EXCLUSION OF GROUND WATER. THIS MAY BE DONE BY THE USE OF STEEL CYLINDER LINERS OR CASINGS THAT ARE APPROVED BY MASSDOT. IF LINERS ARE USED THEY MAY BE RECLAIMED PROVIDED THAT THEY ARE WITHDRAWN AS THE CONCRETE IS BEING PLACED, MAINTAINING A SUFFICIENT HEAD OF CONCRETE WITHIN THE LINER TO PREVENT REDUCTION IN THE FOUNDATION DIAMETER AND TO PREVENT EXTRANEOUS MATERIAL FROM FALLING IN FROM THE SIDES AND MIXING WITH THE CONCRETE.
- IF THE SOIL IS DISTURBED OR REMOVED BEYOND THE NEAT LINES OF THE OUTSIDE DIMENSION OF THE FOUNDATION, IT SHALL BE REPLACED WITH CONCRETE. ANY ADDITIONAL COST FOR THE CONCRETE SHALL BE PAID FOR BY THE CONTRACTOR.
- SPECIAL CARE SHOULD BE GIVEN TO AREAS WHERE WET SOIL IS ENCOUNTERED, TO INSURE THAT THE PREAUGERED HOLE DOES NOT COLLAPSE. THIS MAY REQUIRE THE USE OF STEEL CYLINDER LINERS OR CASINGS TO HOLD THE SOIL IN PLACE UNTIL READY FOR CONCRETE PLACEMENT, UPON APPROVAL FROM THE MASSDOT. THE STEEL CYLINDERS OR CASINGS SHALL BE WITHDRAWN AS THE FOUNDATION CONCRETE IS PLACED.
- IF LEDGE OR UNSUITABLE SOIL IS ENCOUNTERED (i.e. ONE WHICH DOES NOT APPLY TO THE DESIGN TABLES SHOWN ON THIS SHEET), AN ALTERNATIVE DESIGN SHALL BE PROVIDED BY THE DESIGN ENGINEER. IF UTILITIES OR OTHER UNDERGROUND OBSTRUCTIONS ARE ENCOUNTERED, THE CONTRACTOR SHALL BACKFILL THE AREA TO ITS ORIGINAL CONDITION UNTIL AN ALTERNATE DESIGN HAS BEEN PROVIDED BY THE DESIGN ENGINEER AND APPROVED BY MASSDOT. SPECIAL FOUNDATIONS SHALL BE DESIGNED IN ACCORDANCE WITH BASIS OF DESIGN TABLE ABOVE.
- A GALVANIZED WIRE MESH SCREEN SHALL BE INSTALLED AT BASE OF POLE. SCREEN SHALL BE PRESS-FORMED OF 3 OR 4 MESH, 21 GAGE OR HEAVIER, STAINLESS STEEL OR HOT DIPPED GALVANIZED WIRE SCREEN OR APPROVED EQUIVALENT. SCREEN SHALL BE SCREWED INTO POLE BASE PLATE, AND SHALL BE FLUSH WITH THE TOP OF THE PIER FOUNDATION.
- SANDY SOILS WITH STANDARD PENETRATION VALUES GREATER THAN 20 BLOWS PER FOOT SHALL BE CLASSIFIED AS DENSE DRY SAND AND DENSE WET SAND. SANDY SOILS WITH STANDARD PENETRATION VALUES RANGING FROM 6 TO 20 BLOWS PER FOOT SHALL BE CLASSIFIED LOOSE DRY SAND AND LOOSE WET SAND. SANDY SOILS WITH FEWER THAN 6 BLOWS PER FOOT SHALL REQUIRE SPECIAL FOUNDATION DESIGNS BY THE DESIGN ENGINEER AND APPROVED BY MASSDOT. SPECIAL FOUNDATIONS SHALL BE DESIGNED IN ACCORDANCE WITH BASIS OF DESIGN TABLE ABOVE.
- CLAYS WITH STANDARD PENETRATION VALUES GREATER THAN 6 BLOWS PER FOOT SHALL BE CLASSIFIED AS STIFF CLAY. CLAYS WITH STANDARD PENETRATION VALUES RANGING FROM 2 TO 6 BLOWS PER FOOT SHALL BE CLASSIFIED AS SOFT TO MEDIUM STIFF CLAY. CLAYS WITH FEWER THAN 2 BLOWS PER FOOT SHALL REQUIRE SPECIAL FOUNDATION DESIGNS BY THE DESIGN ENGINEER AND APPROVED BY MASSDOT. SPECIAL FOUNDATIONS SHALL BE DESIGNED IN ACCORDANCE WITH BASIS OF DESIGN TABLE ABOVE.
- A SANDY SOIL SHALL ONLY BE CLASSIFIED AS 'DRY' IF THE ENTIRE DRY SAND SHAFT LENGTH SITS ABOVE WET SOILS ACCORDING TO THE BORING LOGS. IF ANY PART OF THE SHAFT LENGTH IS CAST AT OR BELOW THE GROUNDWATER LEVEL, THE SOIL SHALL BE CLASSIFIED AS 'WET'.
- WHERE THE PREDOMINATING SOIL TYPE IS INORGANIC SILT, THE SOIL SHOULD BE TREATED AS CLAY OR WET LOOSE SAND, WHICHEVER LEADS TO A MORE CONSERVATIVE FOUNDATION. INORGANIC SILTS WITH STANDARD PENETRATION N-VALUES LESS THAN 2 BLOWS PER FOOT, ORGANIC SILTS, AND PEAT SHALL REQUIRE SPECIAL FOUNDATION DESIGNS BY THE DESIGN ENGINEER AND APPROVED BY MASSDOT. SPECIAL FOUNDATIONS SHALL BE DESIGNED IN ACCORDANCE WITH BASIS OF DESIGN TABLE ABOVE.
- WHERE FILL CONTAINS CLAY OR SILT, IT SHOULD BE TREATED AS SOFT CLAY.
- MAST ARM FOUNDATIONS ARE DESIGNED TO SUPPORT MAST ARMS WITH OR WITHOUT OPTIONAL LUMINAIRE.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT FOUNDATION DIAMETER IS AT LEAST 17.5" GREATER THAN BOLT CIRCLE DIAMETER FOR ALL STRUCTURES
- IN ORDER TO CREATE A FLUSH SURFACE, CONTRACTOR SHALL REFER TO THE FINAL ELEVATIONS SHOWN ON THE DESIGN PLANS WHEN INSTALLING FOUNDATIONS IMMEDIATELY ADJACENT TO OR WITHIN A SIDEWALK AREA.



PIER FOUNDATION DETAIL

NO SCALE



PIER FOUNDATION PLAN

NO SCALE

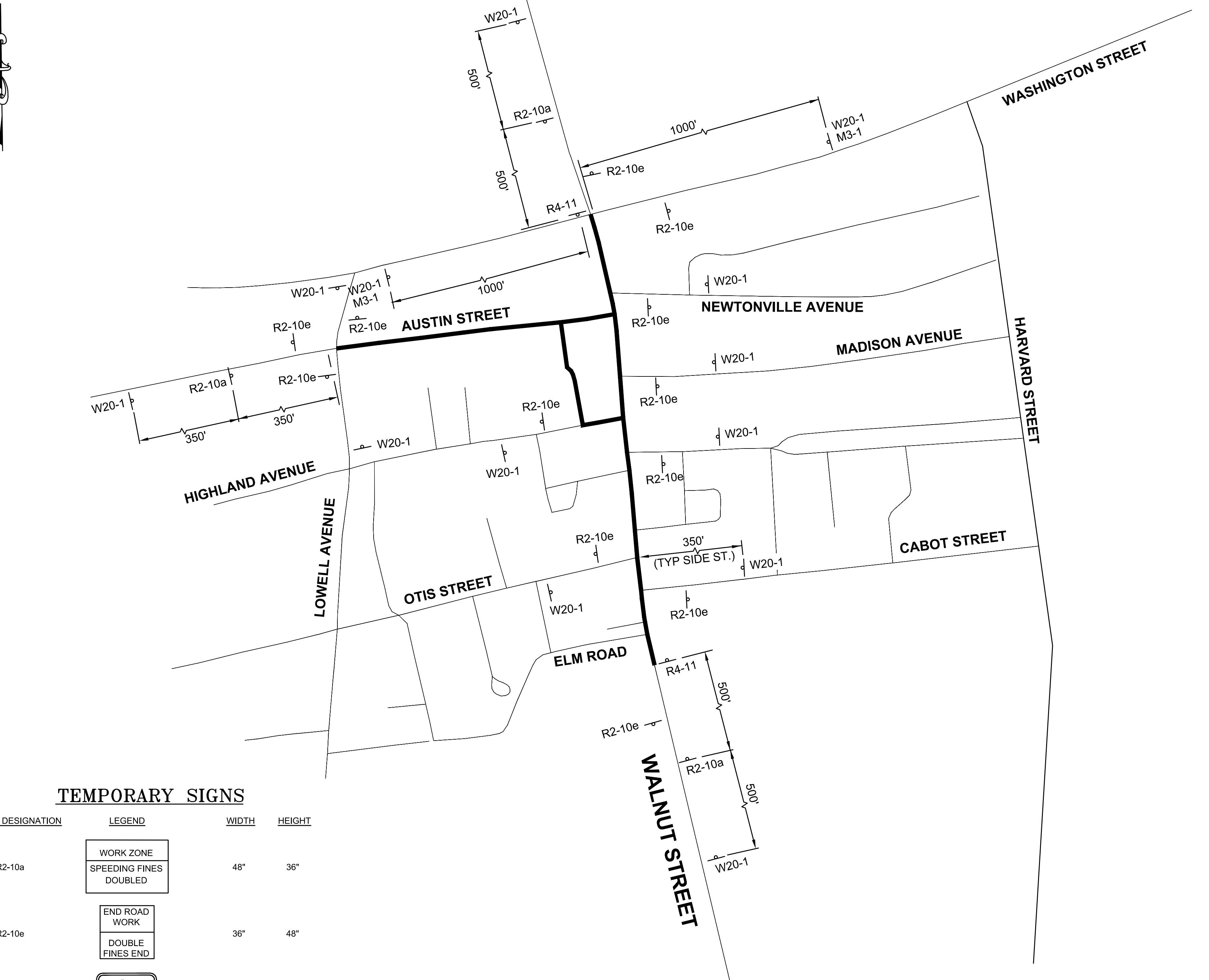
**massDOT**  
Massachusetts Department of Transportation  
Highway Division  
STANDARD DRAWINGS  
OVERHEAD SIGNAL STRUCTURE & FOUNDATION  
MAST ARM CORED PIER FOUNDATIONS  
MASSACHUSETTS DEPARTMENT OF TRANSPORTATION  
HIGHWAY DIVISION  
10 PARK PLAZA BOSTON, MASS  
DECEMBER, 2015

SHEET 5 OF 7 SHEETS

Sheet No.	51	REHABILITATION OF WALNUT STREET NEWTON, MASSACHUSETTS



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#### TEMPORARY SIGNS

SIGN DESIGNATION	LEGEND	WIDTH	HEIGHT
R2-10a	WORK ZONE SPEEDING FINES DOUBLED	48"	36"
R2-10e	END ROAD WORK DOUBLE FINES END	36"	48"
R4-11	MAY USE FULL LANE	30"	30"
M3-1	WALNUT STREET	30"	18"
W20-1	ROAD WORK AHEAD	36"	36"

#### ADVANCED SIGNING

N.T.S.

#### GENERAL NOTES

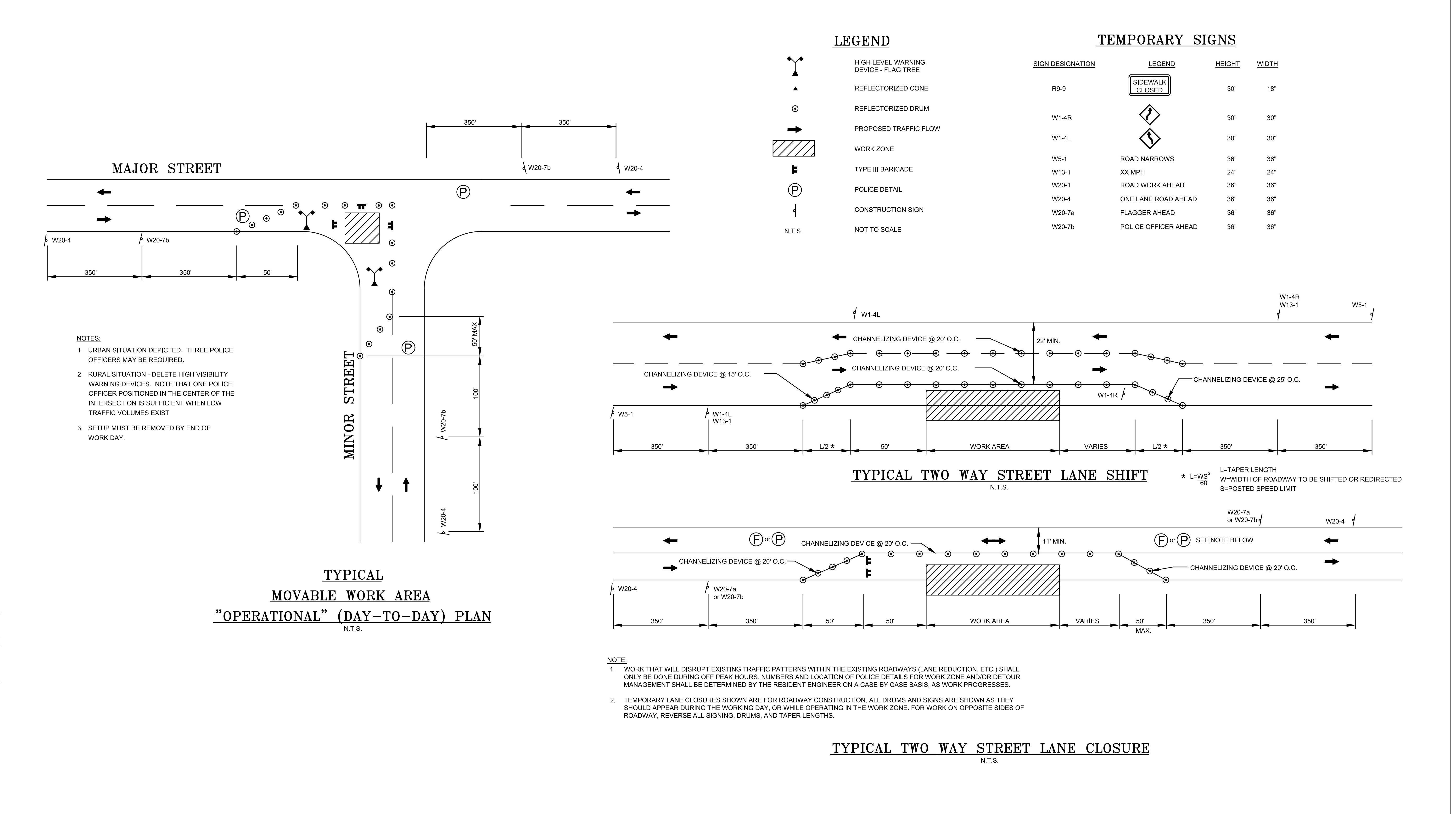
- ALL CONSTRUCTION SIGNING, DRUMS, BARRICADES AND OTHER DEVICES SHALL CONFORM TO PART 6 OF THE LATEST EDITION MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.)
- ALL CHANNELIZING DEVICES SHALL BE SET @ 25' O.C. MAX. UNLESS OTHERWISE NOTED OR ADJUSTED BY THE RESIDENT ENGINEER.
- ALL DRUMS SHALL BE APPROPRIATELY PLACED AND MOVED AS NECESSARY TO MAINTAIN ADEQUATE ABUTTER ACCESS AT ALL TIMES. WORK MAY REQUIRE ADDITIONAL SIGNS, DRUMS AND OTHER TRAFFIC CONTROL DEVICES, GRADING AND TEMPORARY PAVEMENT FOR PASSAGE OF PEDESTRIAN, VEHICULAR AND EMERGENCY TRAFFIC THROUGH THE WORK AREAS, BOTH DURING AND AFTER WORK HOURS, TO MAINTAIN SUCH ACCESS.
- ALL DISTANCE MAY BE ADJUSTED TO FIT FIELD CONDITIONS, AS DIRECTED BY THE CITY. HOWEVER MINIMUM DISTANCES, WHERE INDICATED SHALL BE MAINTAINED.
- THE CONTRACTOR SHALL NOTIFY EACH ABUTTER AT LEAST 24 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OF ACCESS, SUCH AS EXISTING PAVEMENT EXCAVATION, TEMPORARY DRIVEWAY PAVEMENT PLACEMENT AND SIMILAR OPERATIONS.
- THE CONTRACTOR SHALL NOTIFY THE CITY OF NEWTON POLICE, FIRE, AND DEPARTMENT OF PUBLIC WORKS AT LEAST 48 HOURS IN ADVANCE OF LANE CLOSURES.
- A MINIMUM OF ONE LANE OF TRAFFIC IN EACH DIRECTION SHALL BE MAINTAINED AT ALL TIMES ALONG WALNUT STREET DURING CONSTRUCTION.
- DETOURS FOR ONE LANE CLOSURES FOR TRAVELWAY SURFACE RESTORATION WORK ONLY (I.E. PAVEMENT COLD PLANE AND RESURFACING). EXCEPTIONS MAY BE MADE FOR MAJOR INTERSECTION WORK, BUT MUST BE APPROVED IN WRITING BY THE RESIDENT ENGINEER AND COORDINATED WITH THE APPROPRIATE LOCAL AUTHORITIES.
- GRADE SEPARATIONS IN EXCESS OF 2 INCHES DURING NON-WORKING HOURS WILL REQUIRE DELINEATION BY USE OF DRUMS.
- EXCAVATION EDGES IN EXCESS OF 4 INCHES DEEP SHALL BE PROTECTED DURING NON-WORKING HOURS BY BACKFILLING WITH A WEDGE OF GRAVEL OR SOIL COMPAKTED TO A 4:1 SLOPE.
- REMOVE EXISTING PAVEMENT MARKINGS AND PROVIDE TEMPORARY PAVEMENT MARKINGS AS APPLICABLE TO EACH PHASE OF THE CONSTRUCTION AS DIRECTED BY THE CITY. 10' MINIMUM TRAVEL LANE WIDTHS SHALL BE PROVIDED DURING CONSTRUCTION.
- NONESSENTIAL TEMPORARY CONSTRUCTION TRAFFIC CONTROL DEVICES SHALL BE COVERED OR REMOVED DURING NON-WORKING HOURS.
- THE GENERAL SEQUENCE OF WORK IS DEPENDENT UPON THE REMOVAL AND RELOCATION OF THE EXISTING UTILITY POLES AND WIRES THAT ARE FOUND TO BE IN CONFLICT WITH THE PROPOSED WORK, BY THE UTILITY COMPANIES. THE CONTRACTOR SHALL SCHEDULE THE WORK IN EACH AREA TO COORDINATE WITH THE POLE RELOCATION WORK.
- ADVISORY SPEED PLATES (W13-1) SHALL BE USED IF APPROPRIATE AND AS DIRECTED BY THE ENGINEER.
- SUPPORTS FOR ALL TRAFFIC MANAGEMENT SIGNS SHALL BE 4" X 4" PRESSURE TREATED WOOD POSTS.
- ANY LANE CLOSURE WORK MUST BE PERFORMED BETWEEN THE HOURS OF 9:00 AM - 3:30 PM ONLY. EXCEPTION FOR A SHORT PERIOD OF TIME AS APPROVED BY THE CITY. WORKING BEYOND THESE HOURS OR OVER THE WEEKEND MUST BE APPROVED BY THE CITY.
- CEMENT CONCRETE BARRIERS TO BE USED AS NEEDED AND DIRECTED BY THE CITY.
- ALL TEMPORARY TRAFFIC CONTROL WORK FOR SIDEWALK CLOSURE AND PEDESTRIAN DETOUR SHALL CONFORM TO THE LATEST EDITION OF THE MASSDOT STANDARD DETAILS AND DRAWINGS FOR THE DEVELOPMENT OF TEMPORARY TRAFFIC CONTROL PLANS FIGURE PED-1 TO FIGURE PED-7.

#### LEGEND

○	CHANNELIZING DEVICE
→	PROPOSED TRAFFIC FLOW
▨	WORK ZONE
F	TYPE III BARRICADE
P	POLICE DETAIL
F	FLAGGER
—	CONSTRUCTION SIGN
N.T.S.	NOT TO SCALE



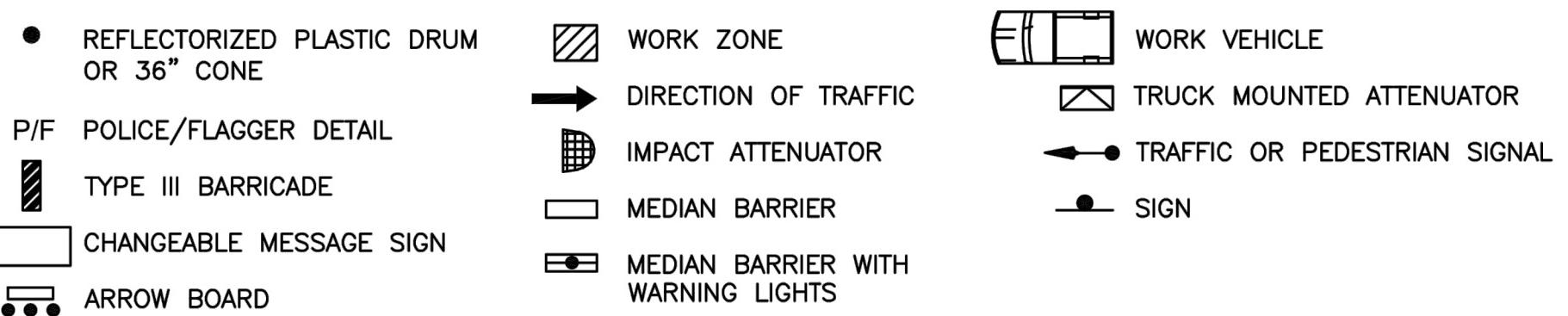
MARK	DATE	DESCRIPTION	Scale	AS NOTED
			Date	AUGUST 2019
			Job No.	R326-1605.00
			Designed by	
			Drawn by	
			Checked by	
			Approved by	



## NOTES:

- ALL TEMPORARY TRAFFIC CONTROL WORK SHALL CONFORM TO THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND ALL REVISIONS, UNLESS SUPERCEDED BY THESE PLANS.
- ALL SIGN LEGENDS, BORDERS, AND MOUNTING SHALL BE IN ACCORDANCE WITH THE MUTCD.
- TTEMPORARY CONSTRUCTION SIGNING AND ALL OTHER TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF ANY WORK.
- TTEMPORARY CONSTRUCTION SIGNING, BARRICADES, AND ALL OTHER NECESSARY WORK ZONE TRAFFIC CONTROL DEVICES SHALL BE REMOVED FROM THE HIGHWAY OR COVERED WHEN THEY ARE NOT REQUIRED FOR CONTROL OF TRAFFIC.
- SIGNS AND SIGN SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY, CHANNELIZING DEVICES, BARRIERS, AND CRASH ATTENUATORS MUST PASS THE CRITERIA SET FORTH IN NCHRP REPORT 350, "RECOMMENDED PROCEDURES FOR THE SAFETY PERFORMANCE EVALUATION OF HIGHWAY FEATURES" AND/OR "MANUAL FOR ASSESSING SAFETY HARDWARE" (MASH).
- CONTRACTORS SHALL NOTIFY EACH ABUTTER AT LEAST 24 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OF ACCESS, SUCH AS CONDUIT INSTALLATION, EXISTING PAVEMENT EXCAVATION, TEMPORARY DRIVEWAY PAVEMENT PLACEMENT, AND SIMILAR OPERATIONS.
- THE FIRST FIVE PLASTIC DRUMS OF A TAPER SHALL BE MOUNTED WITH TYPE A LIGHTS.
- THE ADVISORY SPEED LIMIT, IF REQUIRED, SHALL BE DETERMINED BY THE ENGINEER.
- DISTANCES ARE A GUIDE AND MAY BE ADJUSTED IN THE FIELD BY THE ENGINEER.
- MAXIMUM SPACING OF TRAFFIC DEVICES IN A TAPER (DRUMS OR CONES) IS EQUAL IN FEET TO THE SPEED LIMIT IN MPH.
- MINIMUM LANE WIDTH IS TO BE 11 FEET (3.3m) UNLESS OTHERWISE SHOWN. MINIMUM LANE WIDTH TO BE MEASURED FROM THE EDGE OF DRUMS OR MEDIAN BARRIER.
- ALL SIGNS SHALL BE MOUNTED ON THEIR OWN STANDARD SIGN SUPPORTS.

## LEGEND:



THE IDEAL CAPACITY OF A MAJOR HIGHWAY IS GENERALLY CONSIDERED TO BE 1900 PASSENGER CARS PER HOUR PER LANE (PCPHPL). IN WORK ZONES ON A MULTI-LANE DIVIDED HIGHWAY, THE FOLLOWING VOLUME GUIDELINES HAVE BEEN SUGGESTED:

### MEASURED AVERAGE WORK ZONE CAPACITIES

NUMBER OF LANES		NUMBER OF STUDIES	AVERAGE CAPACITY	
NORMAL (EXISTING)	OPEN (TO TRAFFIC)		VPH	VPHPL
3	1	7	1,170	1,170
2	1	8	1,340	1,340
5	2	8	2,740	1,370
4	2	4	2,960	1,480
3	2	9	2,980	1,490
4	3	4	4,560	1,520

Source: Dudek, C., Notes on Work Zone Capacity and Level of Service, Texas Transportation Institute, Texas A&M University, College Station, Texas (1984)

BY OBTAINING HOURLY TRAFFIC COUNTS FOR A PARTICULAR ROADWAY (WITH A MINIMUM OF A 48-HOUR AUTOMATIC TRAFFIC RECORDER (ATR) COUNT), THIS WILL HELP TO DETERMINE AT WHAT TIMES OF THE DAY OR NIGHT A CERTAIN NUMBER OF LANES MAY BE CLOSED.

### SUGGESTED WORK ZONE WARNING SIGN SPACING

ROAD TYPE	DISTANCE BETWEEN SIGNS **		
	A	B	C
LOCAL OR LOW VOLUME ROADWAYS*	350 (100)	350 (100)	350 (100)
MOST OTHER ROADWAYS*	500 (150)	500 (150)	500 (150)
FREeways AND EXPRESSWAYS*	1,000 (300)	1,500 (450)	2,640 (800)

\* ROAD TYPE TO BE DETERMINED BY MASSDOT OFFICE OF TRANSPORTATION PLANNING.

\*\* DISTANCES ARE SHOWN IN FEET (METERS). THE COLUMN HEADINGS A, B, AND C ARE THE DIMENSIONS SHOWN IN DETAIL/ TYPICAL SETUP FIGURES. THE A DIMENSION IS THE DISTANCE FROM THE TRANSITION OR POINT OF RESTRICTION TO THE FIRST SIGN. THE B DIMENSION IS THE DISTANCE BETWEEN THE FIRST AND SECOND SIGNS. THE C DIMENSION IS THE DISTANCE BETWEEN THE SECOND AND THIRD SIGNS. (THE "THIRD" SIGN IS THE FIRST ONE TYPICALLY ENCOUNTERED BY A DRIVER APPROACHING A TEMPORARY TRAFFIC CONTROL (TTC) ZONE.)

THE "THIRD" SIGN ABOVE IS TYPICALLY REFERRED TO AS AN "ADVANCE WARNING" SIGN ON THE TTCP SETUPS. THESE ADVANCE WARNING SIGNS ARE LOCATED PRIOR TO THE PROJECT LIMITS ON ALL APPROACHES (i.e. THE W20-1 SERIES (ROAD WORK XX FT) SIGNS), AND USUALLY REMAIN FOR THE DURATION OF THE PROJECT. ADDITIONAL SIGNS (i.e. "RIGHT LANE CLOSED 1 MILE" AND "LEFT LANE CLOSED 1 MILE") HAVE BEEN SHOWN IN SOME FIGURES AS EXAMPLES OF REINFORCEMENT SIGN PLACEMENT BUT ARE USED IN RARE OCCASIONS.

THE FIRST AND SECOND WARNING SIGNS ABOVE ARE REFERRED TO AS THE OPERATIONAL (DAY-TO-DAY) WORK ZONE SIGNS AND MAY BE MOVED DEPENDING ON WHERE THE SPECIFIC ROADWAY WORK FOR THAT DAY IS LOCATED.

R2-10a SIGNS SHALL BE PLACED BETWEEN THE SECOND AND THIRD SIGNS AS DESCRIBED ABOVE.

R2-10a, R2-10e, AND W20-1 SERIES SIGNS ARE TO BE INCLUDED ON ALL DETAILS/TYPICAL SETUPS.

Based on: Table 6C-1 MUTCD LATEST EDITION

CONVENTIONAL ROADWAY- A STREET OR HIGHWAY OTHER THAN A LOW-VOLUME ROAD, EXPRESSWAY, OR FREEWAY.

EXPRESSWAY- A DIVIDED HIGHWAY WITH PARTIAL CONTROL OF ACCESS.

FREeway- A DIVIDED HIGHWAY WITH FULL CONTROL OF ACCESS.

LOW-VOLUME ROAD- A FACILITY LYING OUTSIDE OF BUILT-UP AREAS OF CITIES, TOWNS, AND COMMUNITIES, AND IT SHALL HAVE A TRAFFIC VOLUME OF LESS THAN 400 AADT. IT SHALL NOT BE A FREEWAY, EXPRESSWAY, INTERCHANGE RAMP, FREEWAY SERVICE ROAD OR A ROAD ON A DESIGNATED STATE HIGHWAY SYSTEM.

Source: MUTCD LATEST EDITION

### TAPER LENGTH CRITERIA FOR TEMPORARY TRAFFIC CONTROL ZONES

TYPE OF TAPER	TAPER LENGTH (L)*
MERGING TAPER	AT LEAST L
SHIFTING TAPER	AT LEAST 0.5L
SHOULDER TAPER	AT LEAST 0.33L
ONE-LANE, TWO-WAY TRAFFIC TAPER	50 FT MIN.(15 m) 100 FT(30 m) MAX.
DOWNTSTREAM TAPER	50 FT MIN.(15 m) 100 FT MAX.(30 m) PER LANE

Source: Table 6C-3 MUTCD LATEST EDITION

### STOPPING SIGHT DISTANCE AS A FUNCTION OF SPEED

SPEED* (km/h)	DISTANCE (m)	SPEED* (mph)	DISTANCE (ft)
30	35	20	115
40	50	25	155
50	65	30	200
60	85	35	250
70	105	40	305
80	130	45	360
90	160	50	425
100	185	55	495
110	220	60	570
120	250	65	645
		70	730
		75	820

\*POSTED SPEED, OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED

THESE VALUES MAY BE USED TO DETERMINE THE LENGTH OF LONGITUDINAL BUFFER SPACES.

THE DISTANCES IN THE ABOVE CHART REPRESENT THE MINIMAL VALUES FOR BUFFER SPACING.

### FORMULAS FOR DETERMINING TAPER LENGTHS

SPEED LIMIT (S)	TAPER LENGTH (L) FEET
40 MPH OR LESS	$L = \frac{WS^2}{60}$
60 KM/H OR LESS	$L = \frac{WS^2}{155}$
45 MPH OR MORE	$L = WS$
70 KM/H OR MORE	$L = \frac{WS}{1.6}$

WHERE: L = TAPER LENGTH IN FEET (METERS)

W = WIDTH OF OFFSET IN FEET (METERS)

S = POSTED SPEED LIMIT, OR OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICAPATED OPERATING SPEED IN MPH (KM/H)

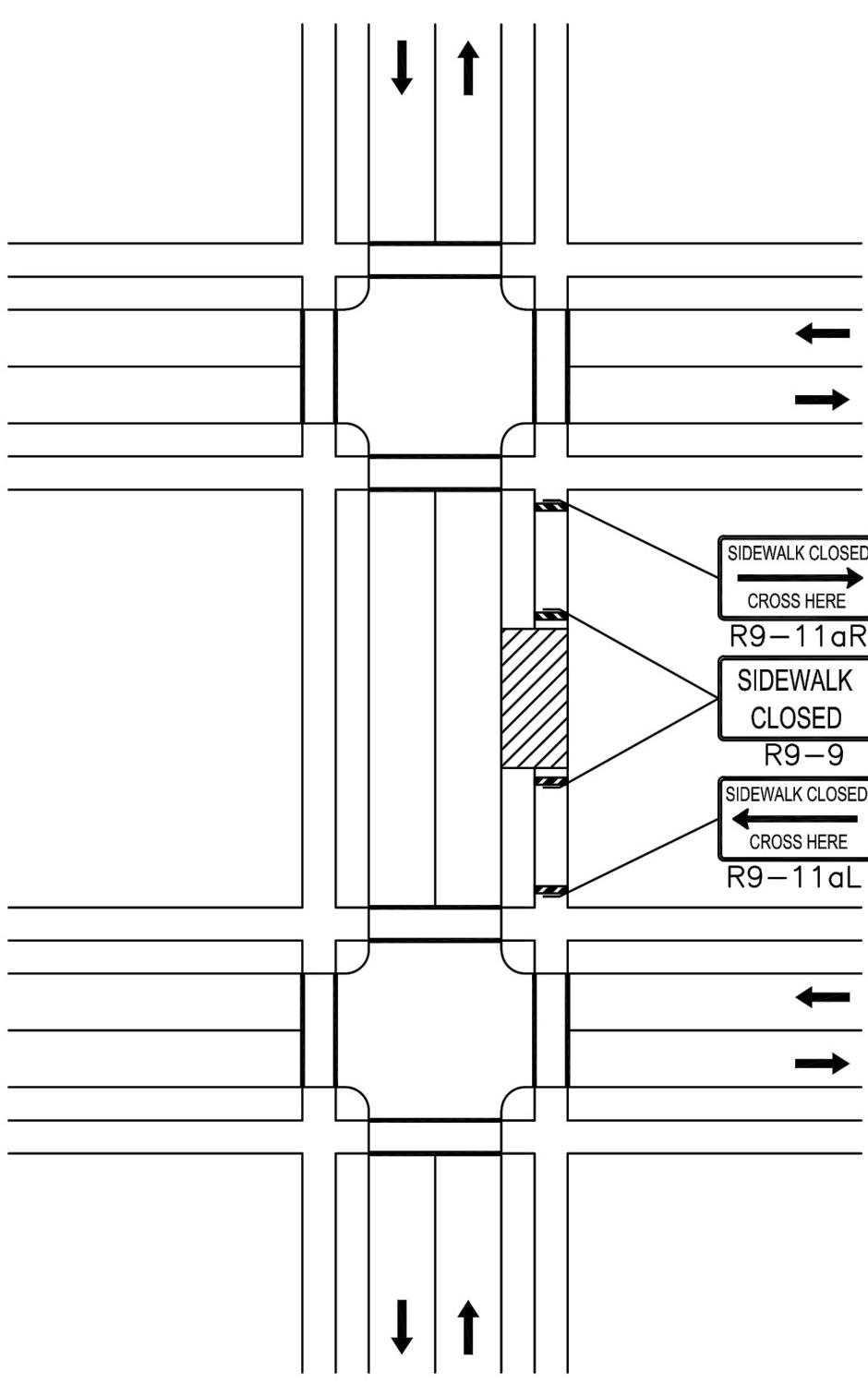
Source: Table 6C-4 MUTCD LATEST EDITION

Source: Table 6C-2 MUTCD LATEST EDITION



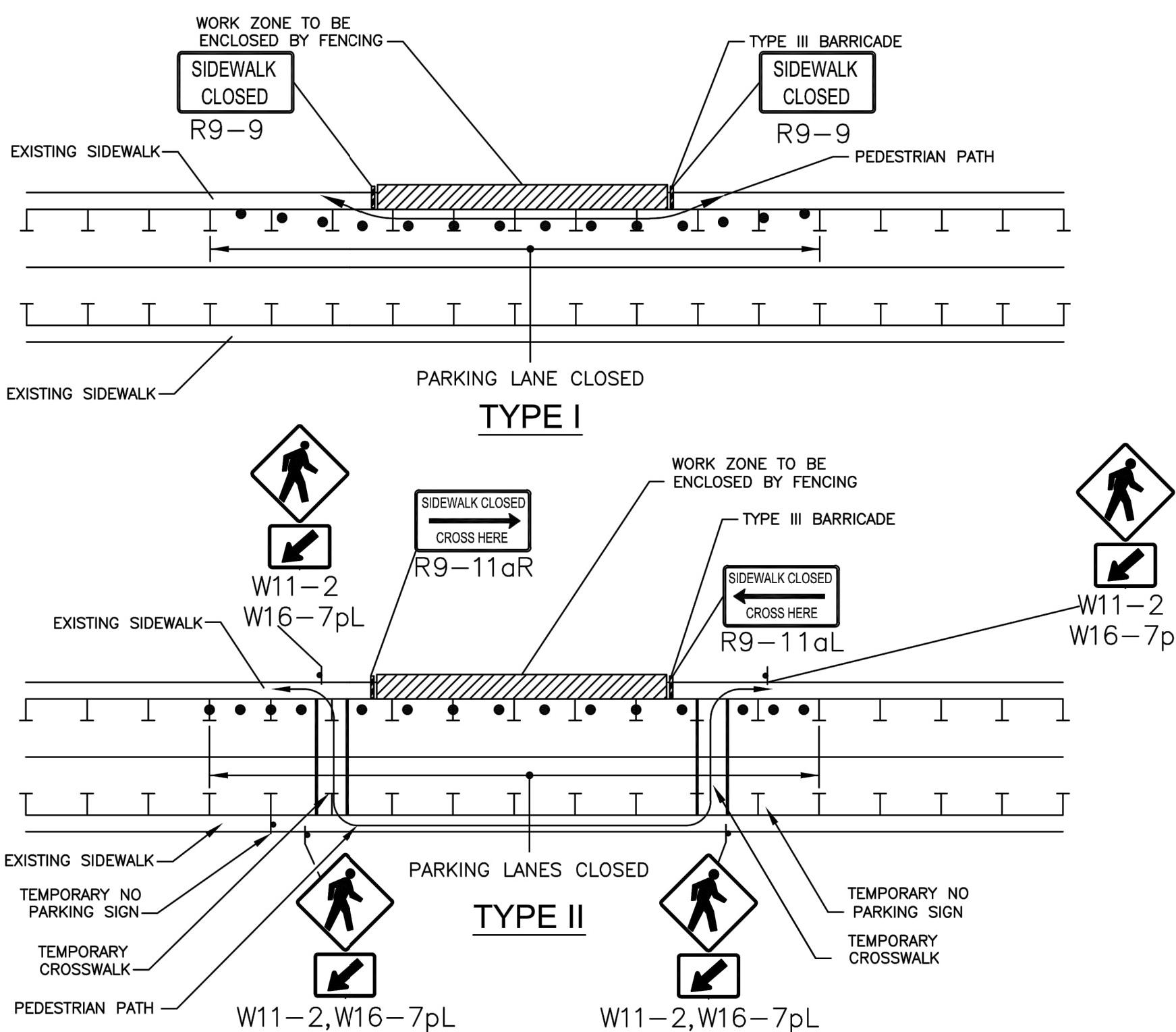
MARK	DATE	DESCRIPTION	Scale	AS NOTED
			Date	AUGUST 2019
			Job No.	R326-1605.00
			Designed by	JRC
			Drawn by	JRC
			Checked by	BLH
			Approved by	JDF

REHABILITATION OF WALNUT STREET NEWTON, MASSACHUSETTS	Sheet No.  55 AS NOTED
TRAFFIC MANAGEMENT PLAN- 03	

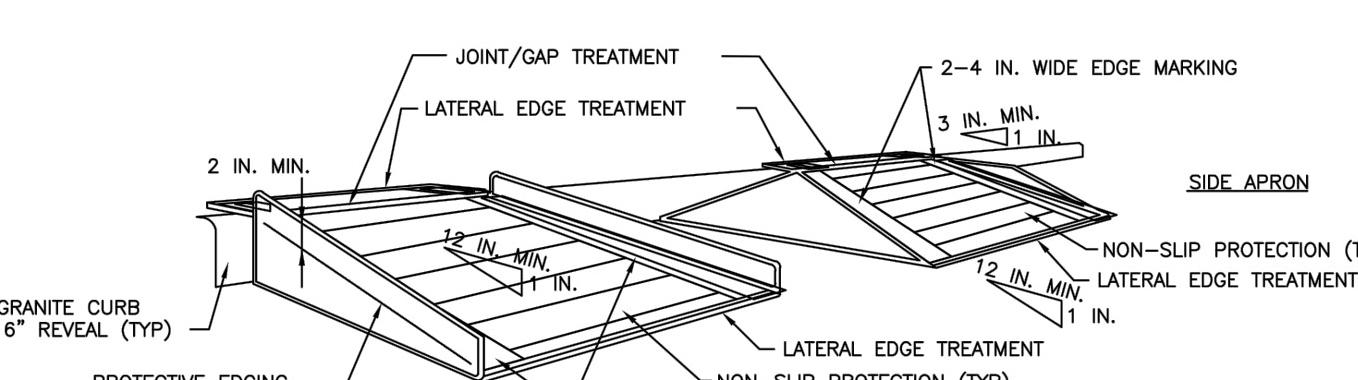
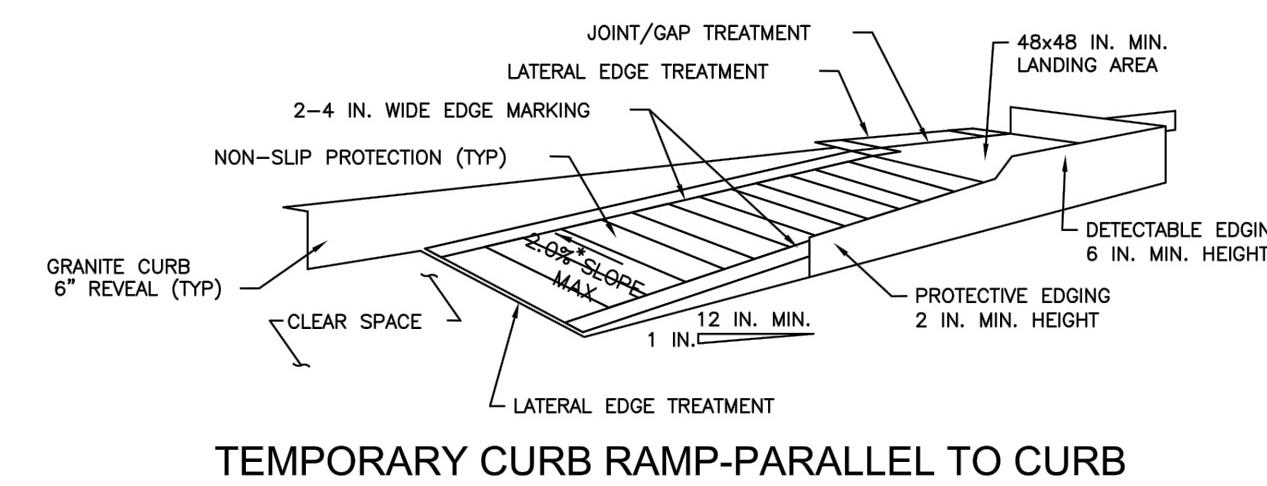


**NOTE:** IF A MINIMUM WIDTH OF 48" OF SOLID SMOOTH UNOBSTRUCTED SURFACE REMAINS ALONG THE WORK AREA THEN THE DETAIL CAN BE DISREGARDED. DELINEATION OF THE WORK AREA WILL STILL BE REQUIRED. ALL PEDESTRIAN DETOUR ROUTES SHALL BE ADA/MAAB COMPLIANT IN THEIR ENTIRETY.

#### TYPICAL SIDEWALK CLOSURE WITHOUT DETOUR N.T.S.



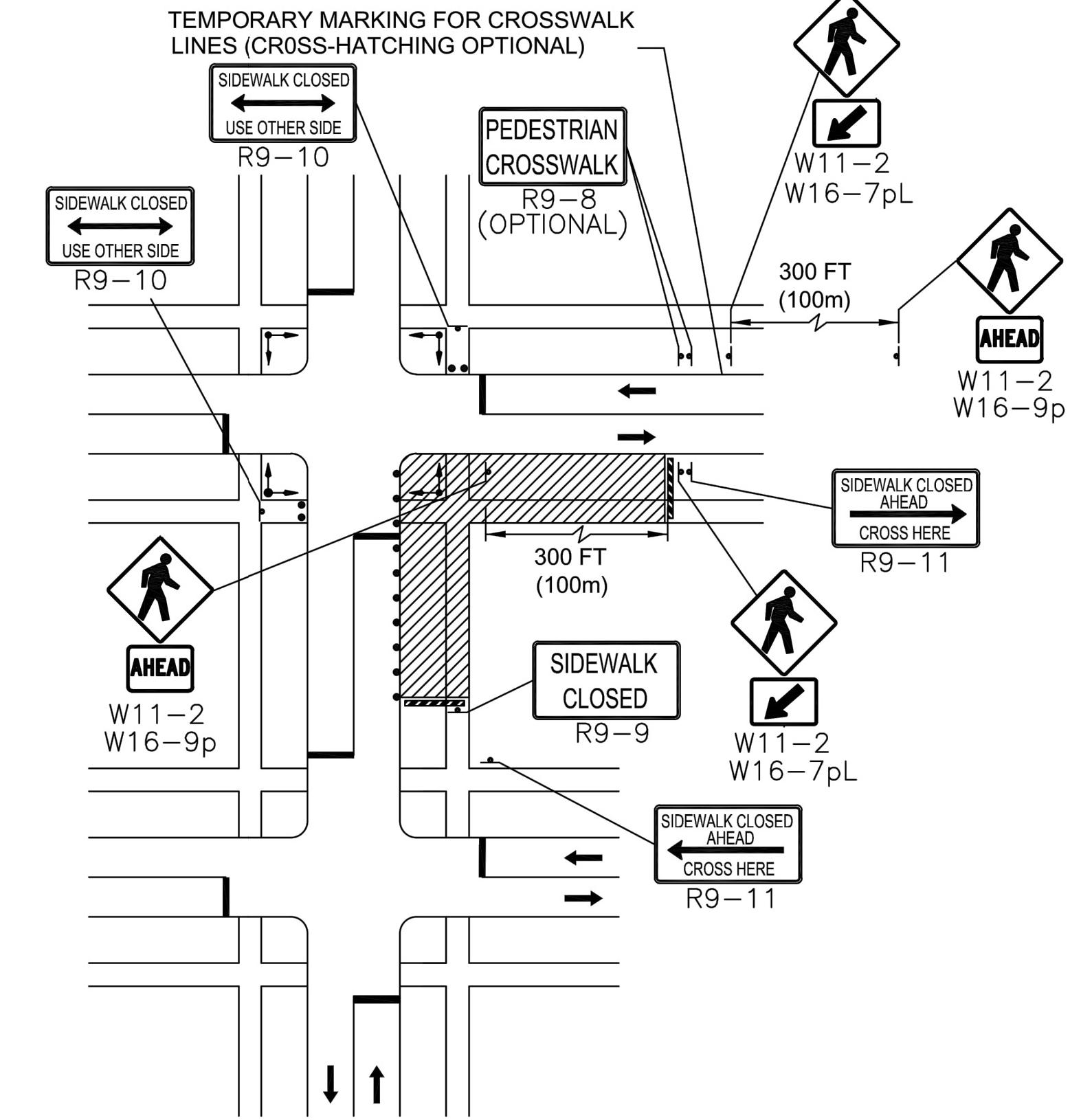
- NOTES**
1. ADDITIONAL ADVANCE WARNING MAY BE NECESSARY.
  2. CONTROLS ONLY FOR PEDESTRIAN TRAFFIC ARE SHOWN. VEHICULAR TRAFFIC SHOULD BE HANDLED AS SHOWN ELSEWHERE.
  3. STREET LIGHTING SHOULD BE CONSIDERED WHEN LOCATING CONTROL DEVICES.
  4. IF THE WORK ZONE DOES NOT PERMIT PEDESTRIANS TO TRAVEL ADJACENT TO IT AS SHOWN IN PEDESTRIAN BYPASS TYPE I, TEMPORARY CROSSWALKS WITH APPROPRIATE SIGNS SHOULD BE INSTALLED TO CROSS PEDESTRIANS TO THE OPPOSITE SIDE OF THE STREET AS SHOWN IN PEDESTRIAN BYPASS TYPE II, AND AS DIRECTED BY THE ENGINEER. TEMPORARY CURB RAMPS WILL BE REQUIRED AT ALL TEMPORARY CROSSWALK LOCATIONS.
  5. BYPASS IS TO BE USED IN CONJUNCTION WITH THE PROPOSED LANE CLOSURE DETAILS AND DURING CONSTRUCTION STAGING, AS DIRECTED BY THE ENGINEER.
  6. THE TEMPORARY SIDEWALK SHOULD BE A MINIMUM OF 4 FEET WIDE. IF THIS WALKWAY EXCEEDS 200 FEET THEN A 5 FOOT X 5 FOOT PASSING ZONE. (FOR SHORT TERM SETUPS < 10 HOURS, THIS CONDITION MAY BE WAIVED. A NOTE WOULD NEED TO BE INCLUDED IN THE TTCP THAT STATES HOW THE CONTRACTOR SHOULD ADDRESS THIS ISSUE.)



TEMPORARY CURB RAMP-PERPENDICULAR TO CURB

#### TEMPORARY CURB RAMP DETAIL N.T.S.

MARK	DATE	DESCRIPTION	Scale	AS NOTED
			Date	AUGUST 2019
			Job No.	R326-1605.00
			Designed by	JRC
			Drawn by	JRC
			Checked by	BLH
			Approved by	JDF



**NOTE:**  
FOR LONG-TERM STATIONARY WORK, THE DOUBLE YELLOW CENTERLINE AND/OR LANE LINES SHOULD BE REMOVED BETWEEN THE CROSSWALK LINES.

#### TYPICAL PEDESTRIAN DETOUR N.T.S.

- NOTES:**
1. CURB RAMPS SHALL BE 60 IN. MINIMUM WIDTH WITH A FIRM, STABLE AND NON-SLIP SURFACE.
  2. PROTECTIVE EDGING WITH A 2 IN. MINIMUM HEIGHT SHALL BE INSTALLED WHEN THE CURB RAMP OR LANDING PLATFORM HAS A VERTICAL DROP OF 6 IN. OR GREATER OR HAS A SIDE APRON SLOPE STEEPER THAN 1:3 (33%). PROTECTIVE EDGING SHOULD BE CONSIDER WHEN THE CURB RAMPS OR LANDING PLATFORMS HAVE A VERTICAL DROP OF 3 IN. OR MORE.
  3. DETECTABLE EDGE WITH 6 IN. MINIMUM HEIGHT AND CONTRAST COLOR SHALL BE INSTALLED ON ALL CURB RAMP LANDINGS WHERE THE WALKWAY CHANGES DIRECTION (TURNS).
  4. CURB RAMPS AND LANDINGS SHOULD HAVE A 1:50 (2%) MAX. CROSS-SLOPE.
  5. CLEAR SPACE OF 48X48 IN. MINIMUM SHALL BE PROVIDED ABOVE AND BELOW THE CURB RAMP.
  6. THE CURB RAMP WALKWAY EDGE SHALL BE MARKED WITH A CONTRASTING COLOR 2 TO 4 IN. WIDE MARKING. THE MARKING IS OPTIONAL WHERE COLOR CONTRASTING EDGING IS USED.
  7. WATER FLOW IN THE GUTTER SYSTEM SHALL HAVE MINIMAL RESTRICTION.
  8. LATERAL JOINTS OR GAPS BETWEEN SURFACES SHALL BE LESS THAN 0.5 IN. WIDTH.
  9. CHANGES BETWEEN SURFACE HEIGHTS SHOULD NOT EXCEED 0.5 IN. LATERAL EDGES SHOULD BE VERTICAL UP TO 0.25 IN. HIGH, AND BEVELED AT 1:2 BETWEEN 0.25 IN. AND 0.5. IN. HEIGHT.



## NOTES

### GENERAL NOTES

- DO NOT SCALE DRAWINGS
- VERIFY DIMENSIONS, GRADES, BOUNDARIES, AND CONSTRUCTION AND IMMEDIATELY REPORT ANY DISCREPANCIES TO THE LANDSCAPE ARCHITECT BEFORE PROCEEDING WITH THE WORK.
- TO THE EXTENT PRACTICABLE, VERIFY DIMENSIONS AND FIELD CONDITIONS AT THE SITE PRIOR TO THE BID SUBMISSION. CONFLICTS, OMISSIONS AND DISCREPANCIES WITHIN THE CONTRACT DOCUMENTS SHALL BE REPORTED IN WRITING TO THE LANDSCAPE ARCHITECT, IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, PRIOR TO THE BID SUBMISSION. THE CONTRACTOR WARRANTS, BY TENDERING HIS BID, THAT THE WORK IS BUILDABLE AS SHOWN.
- DIMENSIONS, NOTES, FINISHES AND FIXTURES SHOWN ON TYPICAL PLANS, SECTION OR DETAILS SHALL APPLY TO SIMILAR, SYMMETRICAL OR OPPOSITE HAND PLANS SECTIONS OR DETAILS, UNLESS NOTED OTHERWISE.
- TYPICAL OR 'TYP' SHALL MEAN THAT THE CONDITION IS REPRESENTATIVE FOR SIMILAR CONDITIONS THROUGHOUT, UNLESS NOTED OTHERWISE. DETAILS ARE USUALLY KEYED AND NOTED 'TYP' ONLY ONE TIME, WHEN THEY FIRST OCCUR.
- IMMEDIATELY NOTIFY THE LANDSCAPE ARCHITECT IN WRITING OF ANY DISCREPANCIES BETWEEN PROJECT MANUAL, LARGE SCALE DRAWINGS, SMALL SCALE DRAWINGS AND DETAILS. THE CONTRACTOR SHALL NOT PROCEED WITH AFFECTED WORK UNTIL LANDSCAPE ARCHITECT PROVIDES CLARIFICATION.
- IF CONTRACT DRAWINGS AND SPECIFICATIONS ARE AT VARIANCE WITH ONE ANOTHER ON A PARTICULAR ITEM OR ITEMS, THE BID PROPOSAL SHALL BE BASED ON THE BETTER QUALITY OR MORE EXPENSIVE OF THE CONDITIONS INDICATED OR NOTED.
- VERIFY THAT DRAWINGS ARE THE LATEST ISSUE PRIOR TO COMMENCING CONSTRUCTION.
- WORK SHALL CONFORM TO THE REQUIREMENTS OF APPLICABLE STATE, FEDERAL AND CITY/COUNTY CODES. STATE AND FEDERAL CODES ARE TO TAKE PRECEDENCE OVER THE DRAWINGS AND SPECIFICATIONS. IF ANY DISCREPANCY IS NOTED, IMMEDIATELY INFORM THE LANDSCAPE ARCHITECT, PRIOR TO PROCEEDING WITH THE WORK.
- ALL WORK IS NEW, UNLESS NOTED OTHERWISE.
- PATCH, REPAIR AND FINISH ALL SURFACES IN AREAS OUTSIDE OF THE EXISTING SCOPE THAT ARE DISTURBED AS A RESULT OF THE WORK.
- APPLY, INSTALL, CONNECT, CLEAN AND/OR CONDITION MANUFACTURED ARTICLES, MATERIALS AND/OR EQUIPMENT PER MANUFACTURER'S INSTRUCTIONS. IN CASE OF CONFLICT BETWEEN MANUFACTURER'S INSTRUCTIONS AND THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL OBTAIN WRITTEN CLARIFICATION FROM THE LANDSCAPE ARCHITECT BEFORE PROCEEDING.
- PROVIDE 1/2" PREMOLDED ISOLATION JOINTS BETWEEN CONCRETE SLAB EDGES AND WALLS, UNLESS OTHERWISE NOTED.
- WHERE NEW PAVING MEETS EXISTING PAVING SMOOTHLY BLEND LINE AND GRADE OF EXISTING WITH NEW.
- CONSULT ALL OF THE DRAWINGS AND SPECIFICATIONS FOR COORDINATION REQUIREMENTS BEFORE COMMENCING CONSTRUCTION.

### SITE PREPARATION AND DEMOLITION NOTES:

- THE LOCATIONS OF UNDERGROUND UTILITIES SHOWN ON THIS PLAN ARE DIAGRAMMATIC ONLY, AND ALL UTILITIES MAY NOT BE SHOWN. THE CONTRACTOR SHALL CONTACT THE PROPER LOCAL AUTHORITIES OR RESPECTIVE UTILITY COMPANY TO CONFIRM THE LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. ANY DAMAGE DUE TO FAILURE OF THE CONTRACTOR TO CONTACT THE PROPER AUTHORITIES SHALL BE BORNE BY THE CONTRACTOR.
- PRIOR TO COMMENCING ANY EXCAVATION WORK, THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES IN ACCORDANCE WITH THE 'DIG SAFE' NOTIFICATION PROCEDURES. THE 'DIG SAFE' TELEPHONE NUMBER FOR MASSACHUSETTS IS 1-888-DIG-SAFE (344-7233).
- EXCAVATION REQUIRED WITHIN PROXIMITY OF EXISTING UTILITY LINES SHALL BE DONE BY HAND. CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING UTILITY LINES OR STRUCTURES INCURRED DURING CONSTRUCTION OPERATIONS AT NO COST TO OWNER.
- CARE SHOULD BE TAKEN IN ALL EXCAVATIONS DUE TO POSSIBLE EXISTENCE OF UNRECORDED UTILITY LINES.
- CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE INSIDE AND OUTSIDE THE LIMIT OF WORK DUE TO THE CONTRACTOR'S OPERATIONS. ANY AREA OUTSIDE THE LIMIT OF WORK THAT IS DISTURBED SHALL BE RESTORED TO ITS ORIGINAL CONDITION AT NO COST TO OWNER.
- ALL REFUSE, DEBRIS AND MISCELLANEOUS ITEMS SCHEDULED TO BE REMOVED AND DISPOSED SHALL BE LEGALLY DISPOSED OF OFF-SITE BY CONTRACTOR. CONTRACTOR SHALL LEAVE WORK SITE FREE OF ANY DEBRIS AT THE END OF EACH DAY'S OPERATIONS.
- ALL ITEMS REQUIRING REMOVAL SHALL BE REMOVED TO FULL DEPTH TO INCLUDE BASE MATERIAL AND FOOTINGS OR FOUNDATIONS AS APPLICABLE, AND LEGALLY DISPOSED OF OFF-SITE BY CONTRACTOR.
- AT ALL LOCATIONS WHERE EXISTING CURBING, CONCRETE PAVEMENT, PRECAST CONCRETE, OR BITUMINOUS CONCRETE ROADWAY ABUT NEW CONSTRUCTION, THE EDGE OF THE EXISTING CURB OR PAVEMENT SHALL BE SAW CUT TO A CLEAN, SMOOTH EDGE.
- ALL EXISTING GRADES BELOW PROPOSED FINISHED ELEVATIONS SHALL BE STRIPPED OF ALL ORGANIC TOPSOIL, CLEARED AND GRUBBED.
- MEET REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND DETAILS OF THE CITY OF NEWTON FOR EROSION CONTROL, SILT FENCES AND INTAKE PROTECTION DURING CONSTRUCTION FOR ALL DRAINAGE STRUCTURES TO REMAIN.
- ANY ITEMS SCHEDULED TO REMAIN OR TO BE STOCKPILED WHICH ARE DAMAGED BY CONTRACTORS' OPERATIONS SHALL BE AT CONTRACTORS' EXPENSE.

### LAYOUT NOTES

- ALL LINES AND DIMENSIONS ARE PARALLEL OR PERPENDICULAR TO THE LINES FROM WHICH THEY ARE MEASURED UNLESS OTHERWISE INDICATED.
- ALL DIMENSIONS ARE GIVEN TO THE FRONT FACES OF TYP. WALL, BACK OF CURB, EDGE OF PAVING OR CENTERLINE UNLESS OTHERWISE STATED.
- ALL ANGLES ARE ASSUMED TO BE 90 DEGREES UNLESS OTHERWISE STATED.
- ANY CHANGES PROPOSED TO DIMENSIONS SHOWN ON THIS DRAWING SHALL BE APPROVED BY THE LANDSCAPE

### ARCHITECT PRIOR TO CONSTRUCTION.

- ALL PROPOSED LAYOUT, LINE, AND GRADE WORK PER DRAWINGS AND SPECIFICATIONS SHALL BE LAID OUT BY A REGISTERED CIVIL ENGINEER OR SURVEYOR OF THE COMMONWEALTH OF MASSACHUSETTS ENGAGED BY THE CONTRACTOR.
- ALL NEW PLANT MATERIAL SHALL CONFORM TO THE MINIMUM GUIDELINES ESTABLISHED BY THE AMERICAN STANDARD FOR NURSERY STOCK PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC. IN ADDITION, ALL NEW PLANT MATERIAL FOR THE PROJECT SHALL BE OF SPECIMEN QUALITY.
- ALL NEW PLANTS TO BE BALLED AND BURLAPPED OR CONTAINER-GROWN, UNLESS OTHERWISE NOTED ON PLANT LIST.
- ANY PROPOSED SUBSTITUTIONS OF PLANT SPECIES SHALL BE MADE WITH PLANTS OF EQUIVALENT OVERALL FORM, HEIGHT, BRANCHING HABIT, FLOWER, LEAF, COLOR, FRUIT AND CULTURE ONLY AS APPROVED BY THE LANDSCAPE ARCHITECT.
- ALL NEW PLANTS SHALL BE TAGGED AND APPROVED BY THE LANDSCAPE ARCHITECT AT THE NURSERY PRIOR TO DIGGING OR DELIVERY TO SITE. CONTRACTOR TO NOTIFY THE LANDSCAPE ARCHITECT TWO WEEKS IN ADVANCE TO TREE TAGGING TO SCHEDULE.
- CONTRACTOR SHALL LOCATE AND VERIFY ALL EXISTING UTILITY LINES PRIOR TO PLANTING AND SHALL REPORT ANY CONFLICTS TO THE LANDSCAPE ARCHITECT.
- STAKE LOCATION OF ALL PROPOSED PLANTING FOR APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO THE COMMENCEMENT OF PLANTING.
- NEW PLANT MATERIAL SHALL BEAR SAME RELATIONSHIP TO GRADE AS IT BORE TO PREVIOUS GRADE AT NURSERY. PLANT MATERIAL SHALL ALSO BE IN THE SAME SOLAR ORIENTATION AS AT NURSERY. MATERIAL SHALL BE TAGGED ON THE NORTH SIDE OF THE PLANT TO FACILITATE PROPER ORIENTATION.
- ALL PLANT BEDS TO RECEIVE TWO INCHES (2') OR THREE INCHES (3') OF BARK MULCH PER SPECIFICATIONS.
- THE CONTRACTOR SHALL SUPPLY ALL PLANT MATERIAL IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTING SHOWN ON ALL DRAWINGS.

## MATERIALS

	CLEAN FILL
	CONCRETE
	GRAVEL
	SAND
	SUB GRADE
	PLANTING SOIL
	MULCH
	INSULATION - RIGID
	STRUCTURAL SOIL

## GRAPHIC SYMBOLS

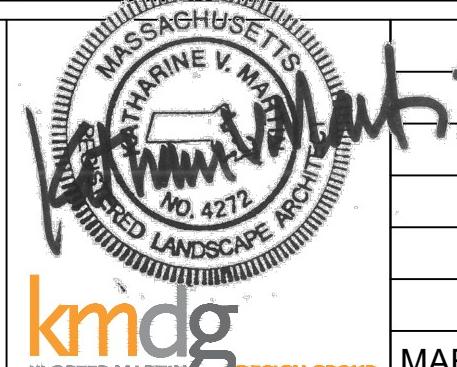
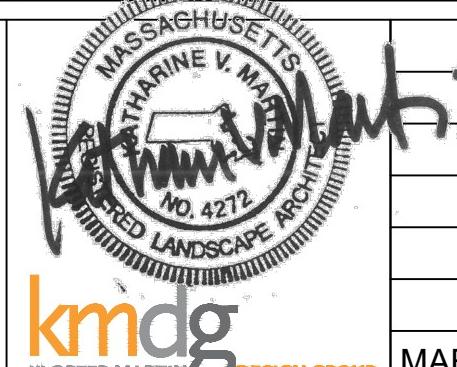
	VIEW NAME	DRAWING TITLE
	EXTERIOR ELEVATION KEY	
	BUILDING SECTION MARKER	
	VERTICAL ELEVATION KEY	
	DETAIL AREA MARKER	
	DETAIL SECTION MARKER	
	COLUMN GRID LINE	
	MATCH LINE A0.0	MATCH LINE
	SLOPE MARKER	LANDSCAPE PAVING TAG
	SPOT ELEVATION - PLAN	LANDSCAPE STONE SURFACING TAG
	SPOT ELEVATION - SECTION	LANDSCAPE SOIL TAG
	REVISION CLOUD AND REVISION TAG	LANDSCAPE WALL/FENCE TAG
	ALIGN SURFACES	LANDSCAPE FURNISHINGS TAG
	CENTERLINE	

## ABBREVIATIONS LIST

AD	AREA DRAIN
ADJ	ADJACENT
AGG	AGGREGATE
BC	BOTTOM OF CURB
BETW	BETWEEN
BIT	BITUMINOUS
BS	BOTTOM OF STEP
BW	BOTTOM OF WALL
BWSC	BOSTON WATER & SEWER
CB	CATCH BASIN
CLF	CHAIN LINK FENCE
CIP	CAST IN PLACE
CJ	CONTROL JOINT
CONC	CONCRETE
CO	CLEAN OUT
CP	CENTER POINT
DETL	DETAIL
DIA	DIAMETER
DIM	DIMENSION
DWG	DRAWING
EA	EACH
EHH	ELECTRIC HAND HOLE
EJ	EXPANSION JOINT
EQ	EQUAL
EX	EXISTING
EXP	EXPANSION
FFE	FLOOR ELEVATION
FIN	FINISH
FP	FLAG POLE
GA	GAUGE
GALV	GALVANIZED
GRAN	GRANITE
GSO	GAS SHUT OFF
HH	ELECTRIC HANDHOLE
HT	HEIGHT
HYD	HYDRANT
INACC	INACCESSIBLE
JT	JOINT
LA	LANDSCAPE ARCHITECT
LP	LIGHT POLE
MATL	MATERIAL
MAX	MAXIMUM
MH	MANHOLE
MIN	MINIMUM
NTS	NOT TO SCALE
NVC	NO VISIBLE CONNECTION
OC	ON CENTER
OD	OUTSIDE DIAMETER
PC	POINT OF CURVATURE
PCS	PIECES
POB	POINT OF BEGINNING
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	PRESSURE TREATED
PTD	PAINTED
PVMT	PAVEMENT
REC	RECORD
REINF	REINFORCED
REQ	REQUIRED
SBSS	SAND BASED STRUCTURAL SOIL
SF	SQUARE FEET
SHT	SHEET
SIM	SIMILAR
STL	STEEL
TC	TOP OF CURB
IH	THRESHOLD
TS	TOP OF STEP
TW	TOP OF WALL
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VERT	VERTICAL
VGC	VERTICAL GRANITE CURB
VIF	VERIFY IN FIELD
WG	WATER GATE
WIF	WROUGHT IRON FENCE
WSO	WATER SHUT OFF
WWM	WELDED WIRE MESH



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NO. 4272  
MASSACHUSETTS  
THERARINE V. MARTIN  
LICENCED LANDSCAPE ARCHITECT

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### PROJECT PLANT SCHEDULE

TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
E#	11	Acer rubrum	Red Maple	2.5-3" cal.	BLEND OF 'OCTOBER GLORY' AND 'RED SUNSET'
AA	3	Amelanchier x grandiflora 'Autumn Brilliance'	Autumn Brilliance Serviceberry	4-5' ht. B&B	MULTI-STEM
D#	17	Gleditsia 'Shade Master'	'Shade Master' Honey Locust	3.5-4" cal.	
A#	10	Gymnocladus dioicus 'Stately Manor'	'Stately Manor' Kentucky Coffee Tree	3-3.5" cal.	
--	12	Picea glauca 'Conica'	Dwarf Alberta Spruce	3 gal	FOR MOVABLE PLANTERS
C#	16	Prunus subhirtella 'Autumnalis'	'Autumnalis' Cherry Tree	2.5-3" cal.	
B#	11	Ulmus	Elm	3-3.5" cal.	BLEND OF 'VALLEY FORGE', 'PRINCETON', AND 'ACCOLADE'
SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
HI	3	Hamamelis x intermedia 'Arnold Promise'	Arnold Promise Hybrid Witch Hazel	5 gal	
IN	5	Ilex glabra 'Nigra'	Nigra Inkberry	5 gal	
GROUND COVERS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
--	144	Ipomoea batatas	Sweet Potato Vine	4" pot	FOR MOVABLE PLANTERS
	350	Pachysandra procumbens	Allegheny Spurge	4" pot	9" O.C.
	350	Vinca minor	Common Periwinkle	4" pot	9" O.C.
BULBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
--	750	Narcissus 'Barrett Browning'	Large Cupped Daffodil	bulb	12" O.C., BLENDED WITH NARCISSUS 'ORANGE PROGRESS'
--	750	Narcissus 'Orange Progress'	Large Cupped Daffodil	bulb	12" O.C., BLENDED WITH NARCISSUS 'BARRETT BROWNING'

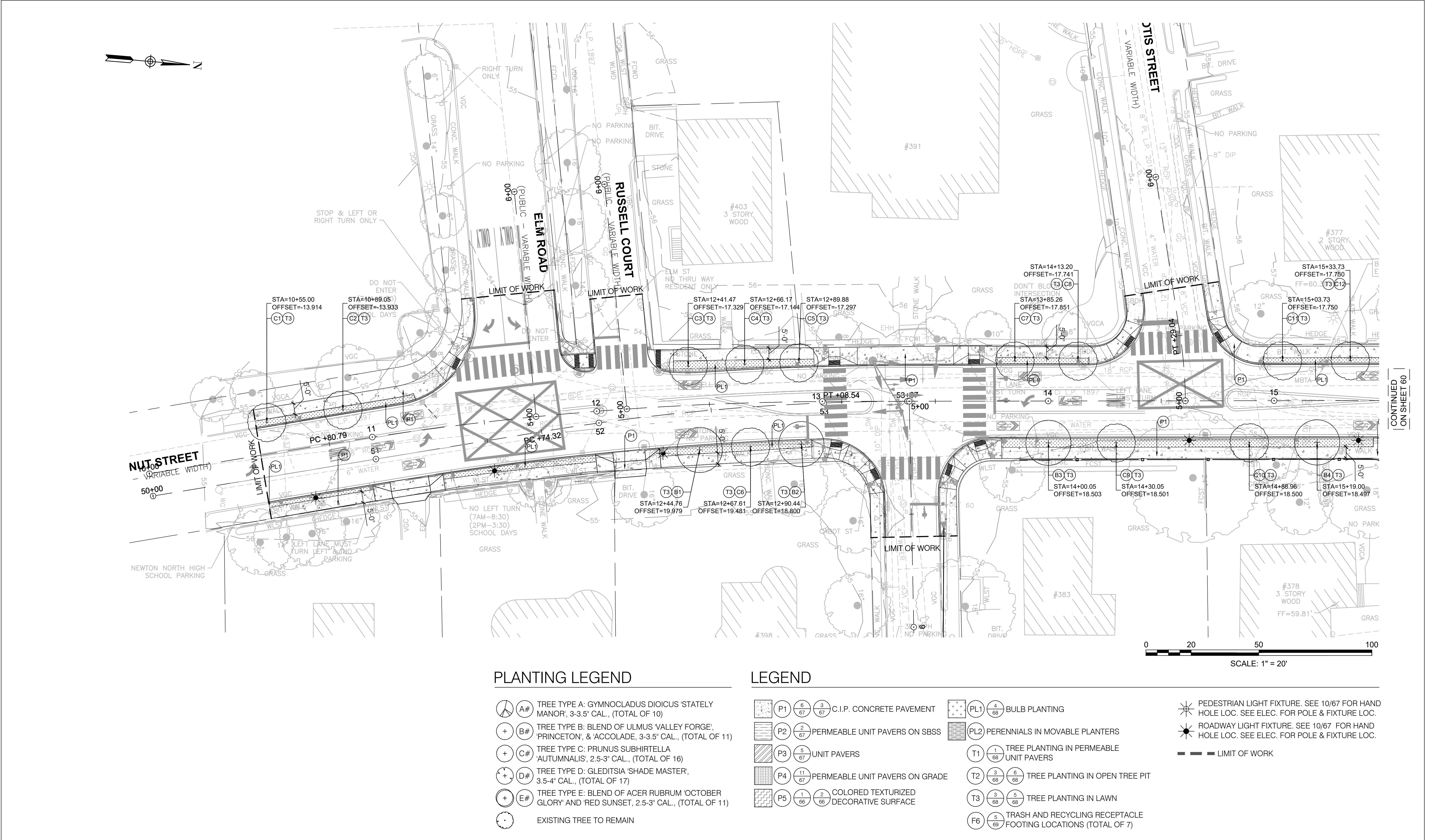
THIS LINE IS ONE INCH  
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22" X 34" DRAWING

REHABILITATION OF WALNUT STREET  
NEWTON, MASSACHUSETTS

PLANT SCHEDULE

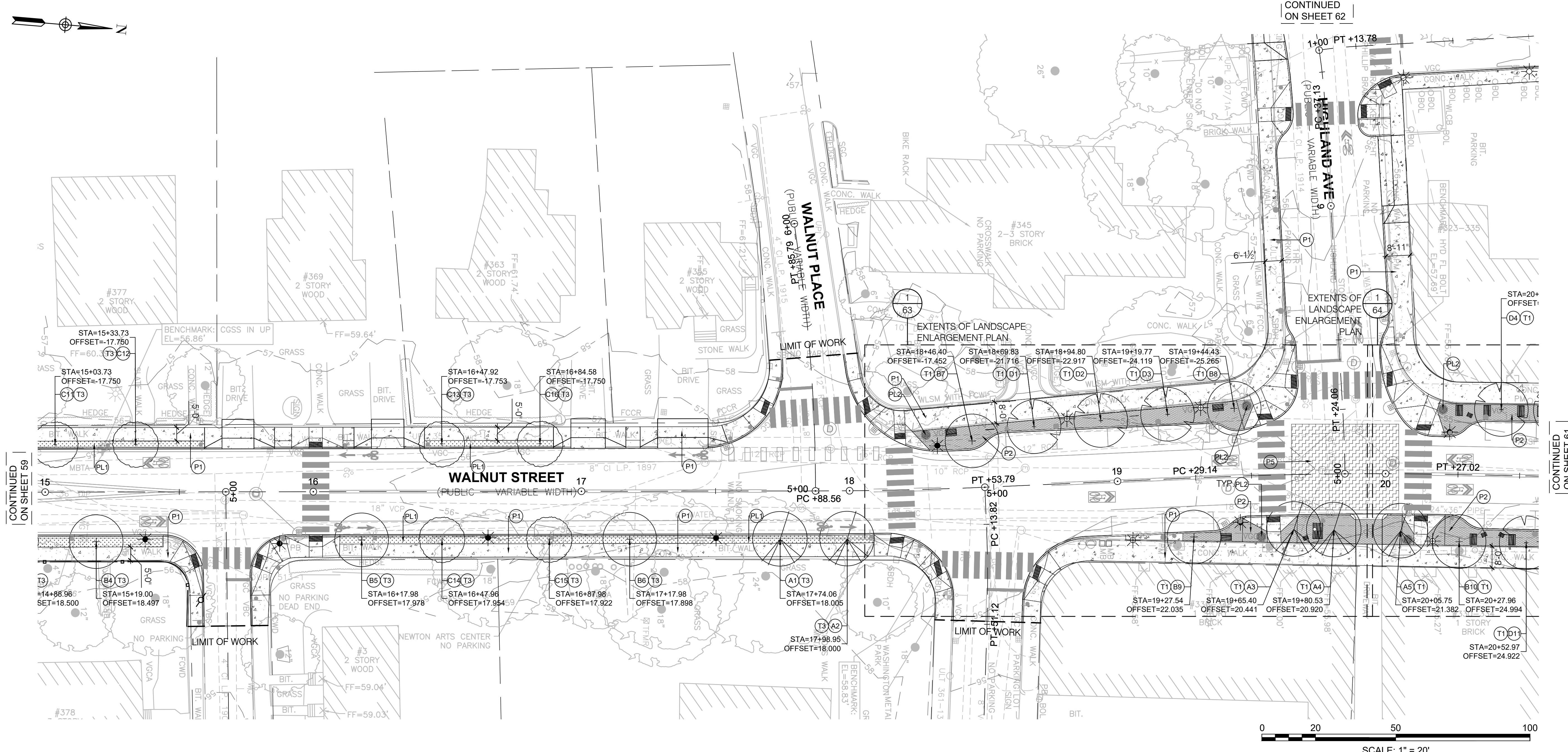
Sheet No.

58



Scale	AS NOTED
Date	JULY 2019
Job No.	R326-1605.00
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Drawn by	AA
Checked by	KP
Approved by	KM

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CONTINUED  
ON SHEET 59

## PLANTING LEGEND

- (A#) TREE TYPE A: GYMNOCLADUS DIOICUS 'STATELY MANOR', 3-3.5" CAL., (TOTAL OF 10)
- (B#) TREE TYPE B: BLEND OF ULMUS 'VALLEY FORGE', 'PRINCETON', & 'ACCOLADE', 3-3.5" CAL., (TOTAL OF 11)
- (C#) TREE TYPE C: PRUNUS SUBHIRTILLA 'AUTUMNALIS', 2.5-3" CAL., (TOTAL OF 16)
- (D#) TREE TYPE D: GLEDITIA 'SHADE MASTER', 3.5-4" CAL., (TOTAL OF 17)
- (E#) TREE TYPE E: BLEND OF ACER RUBRUM 'OCTOBER GLORY' AND 'RED SUNSET', 2.5-3" CAL., (TOTAL OF 11)
- EXISTING TREE TO REMAIN

## LEGEND

- (P1) 6 C.I.P. CONCRETE PAVEMENT
- (P2) 2 PERMEABLE UNIT PAVERS ON SBSS
- (P3) 5 UNIT PAVERS
- (P4) 11 PERMEABLE UNIT PAVERS ON GRADE
- (P5) 1 COLORED TEXTURIZED
- (P6) 2 DECORATIVE SURFACE
- (PL1) 4 BULB PLANTING
- (PL2) PERENNIALS IN MOBILE PLANTERS
- (T1) 1 TREE PLANTING IN PERMEABLE UNIT PAVERS
- (T2) 3 6 TREE PLANTING IN OPEN TREE PIT
- (T3) 3 5 TREE PLANTING IN LAWN
- (F6) 5 TRASH AND RECYCLING RECEPTACLE
- FOOTING LOCATIONS (TOTAL OF 7)

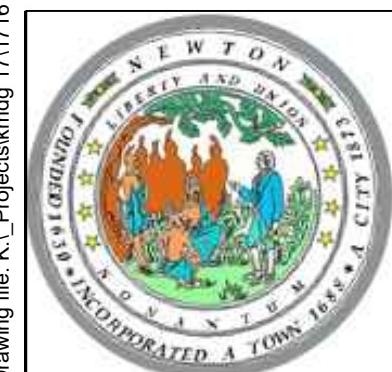
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ON SHEET 62

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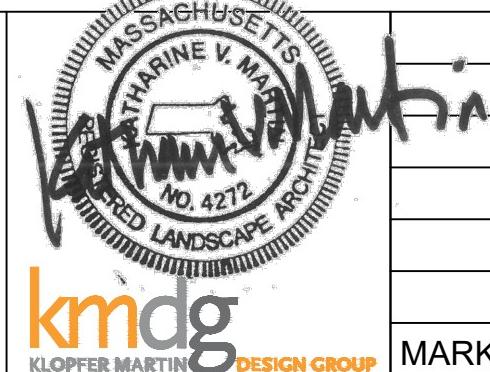
REHABILITATION OF WALNUT STREET  
NEWTON, MASSACHUSETTS

LANDSCAPE PLAN - 2

Sheet No.  
60



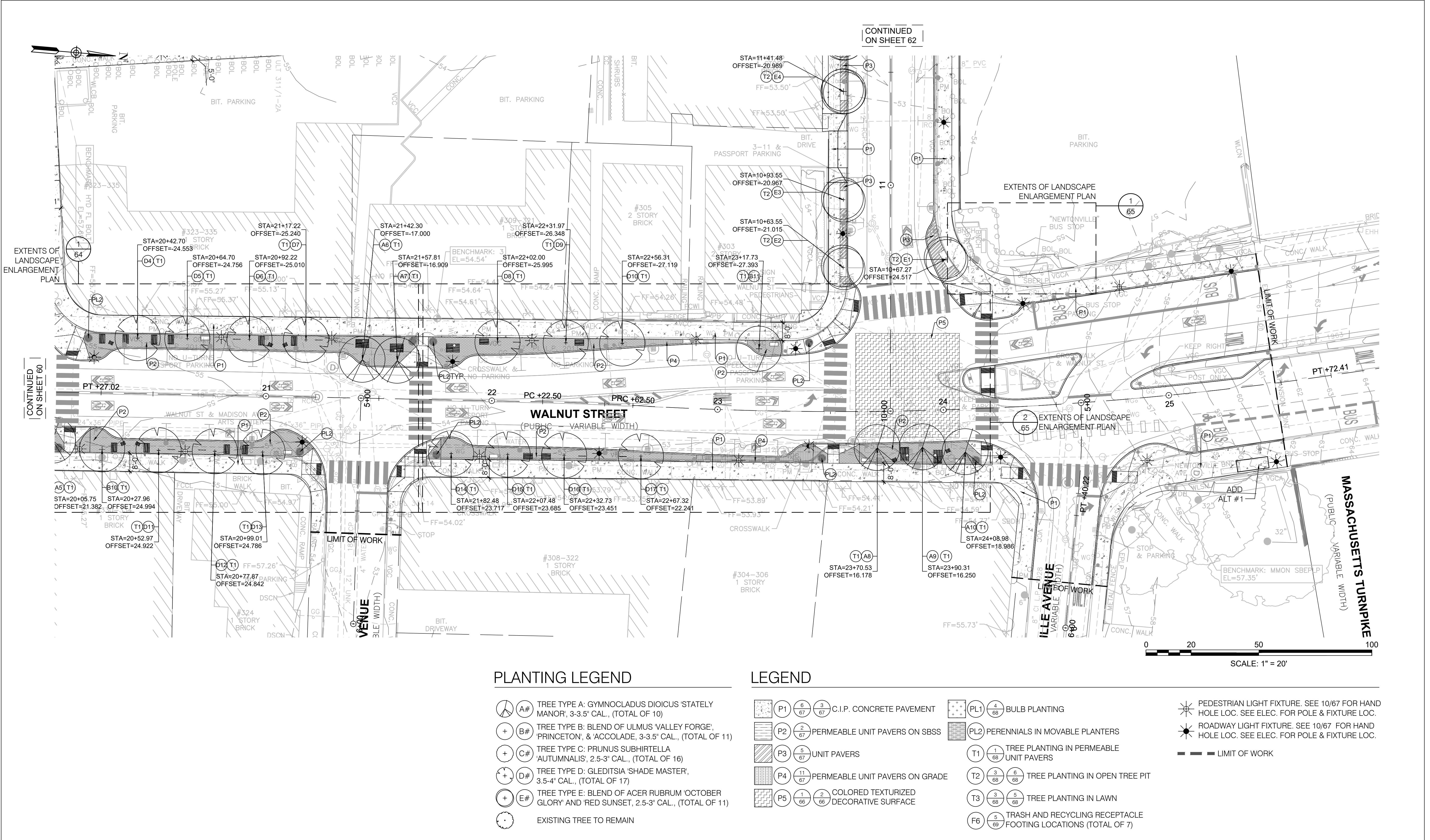
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Date	JULY 2019
Job No.	R326-1605.00
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Drawn by	AA
Checked by	KP
Approved by	KM

MARK DATE DESCRIPTION

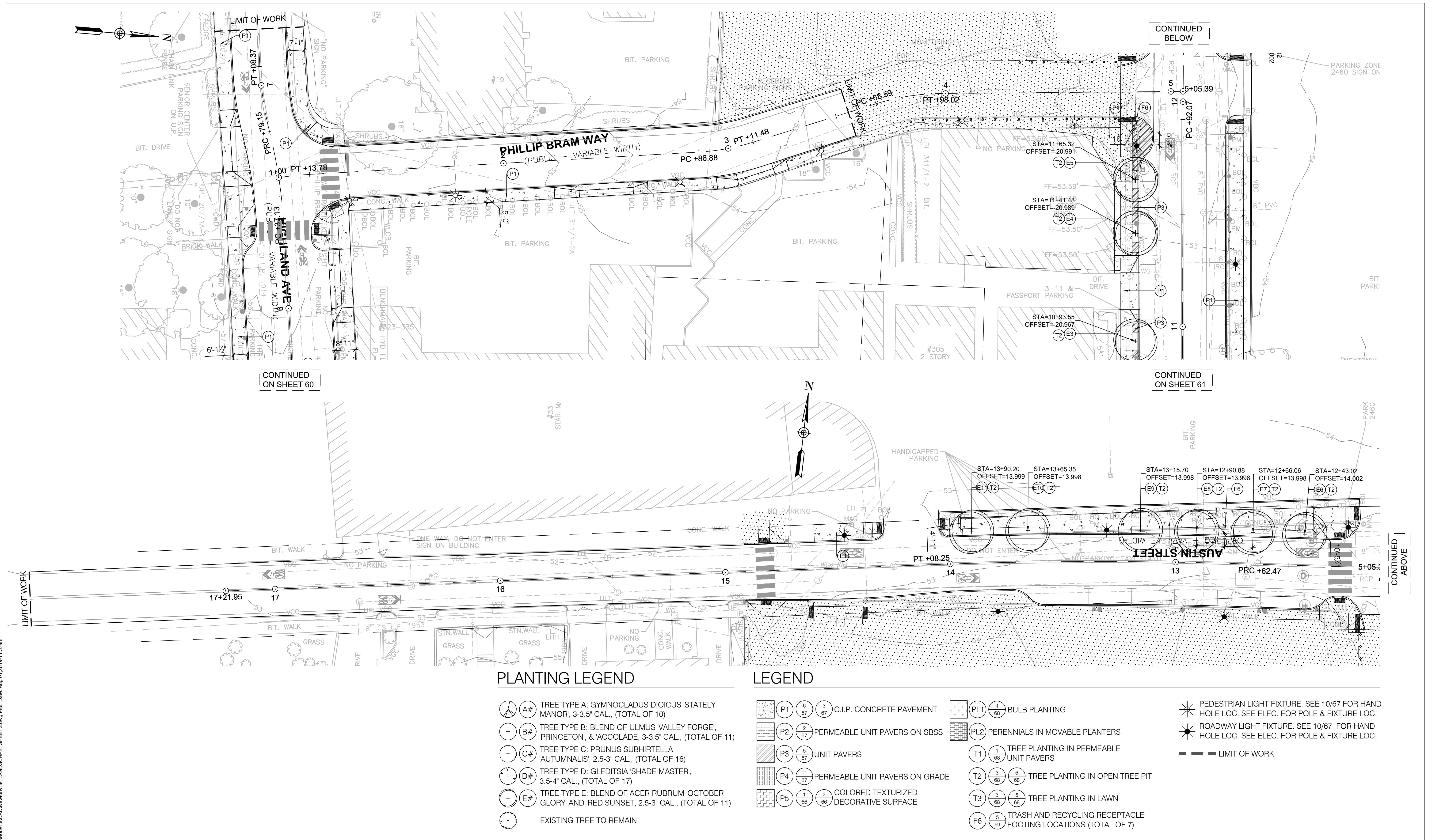


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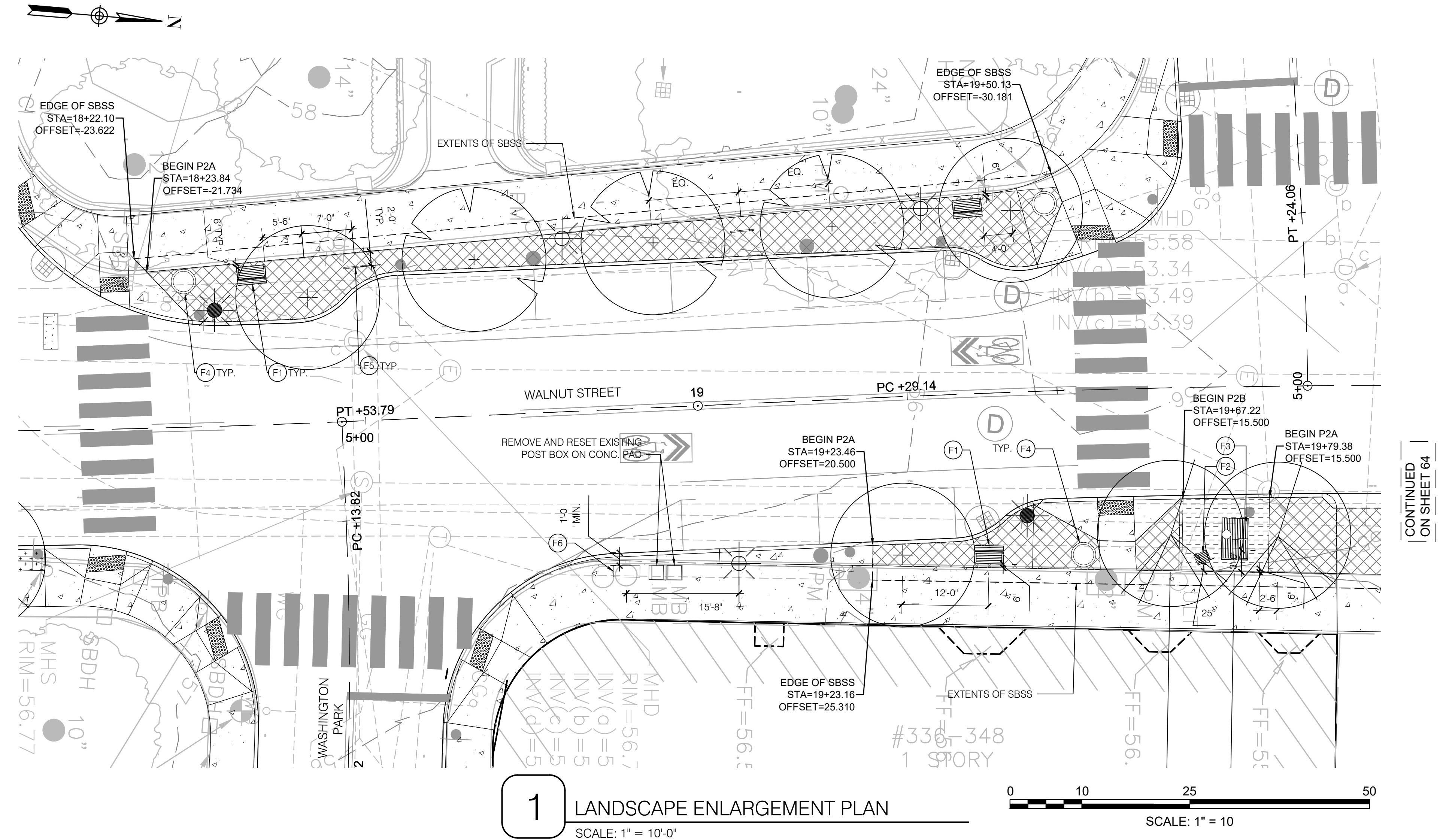
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**REHABILITATION OF WALNUT STREET**  
NEWTON, MASSACHUSETTS  
LANDSCAPE PLAN - 3

Sheet No.  
**61**



	<b>Environmental Partners GROUP</b> A partnership for engineering solutions.		<table border="1"> <thead> <tr> <th>Scale</th><th>AS NOTED</th></tr> </thead> <tbody> <tr> <td>Date</td><td>JULY 2019</td></tr> <tr> <td>Job No.</td><td>R326-1605.00</td></tr> <tr> <td>Designed by</td><td>KMDG</td></tr> <tr> <td>Drawn by</td><td>AA</td></tr> <tr> <td>Checked by</td><td>KP</td></tr> <tr> <td>Approved by</td><td>KM</td></tr> </tbody> </table>	Scale	AS NOTED	Date	JULY 2019	Job No.	R326-1605.00	Designed by	KMDG	Drawn by	AA	Checked by	KP	Approved by	KM	<b>REHABILITATION OF WALNUT STREET</b> <b>NEWTON, MASSACHUSETTS</b>	Sheet No. <b>62</b>
Scale	AS NOTED																		
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Approved by	KM																		
MARK	DATE	DESCRIPTION	THIS LINE IS ONE INCH LONG WHEN PLOTTED AT FULL SCALE ON A 22" X 34" DRAWING	LANDSCAPE PLAN - 4															



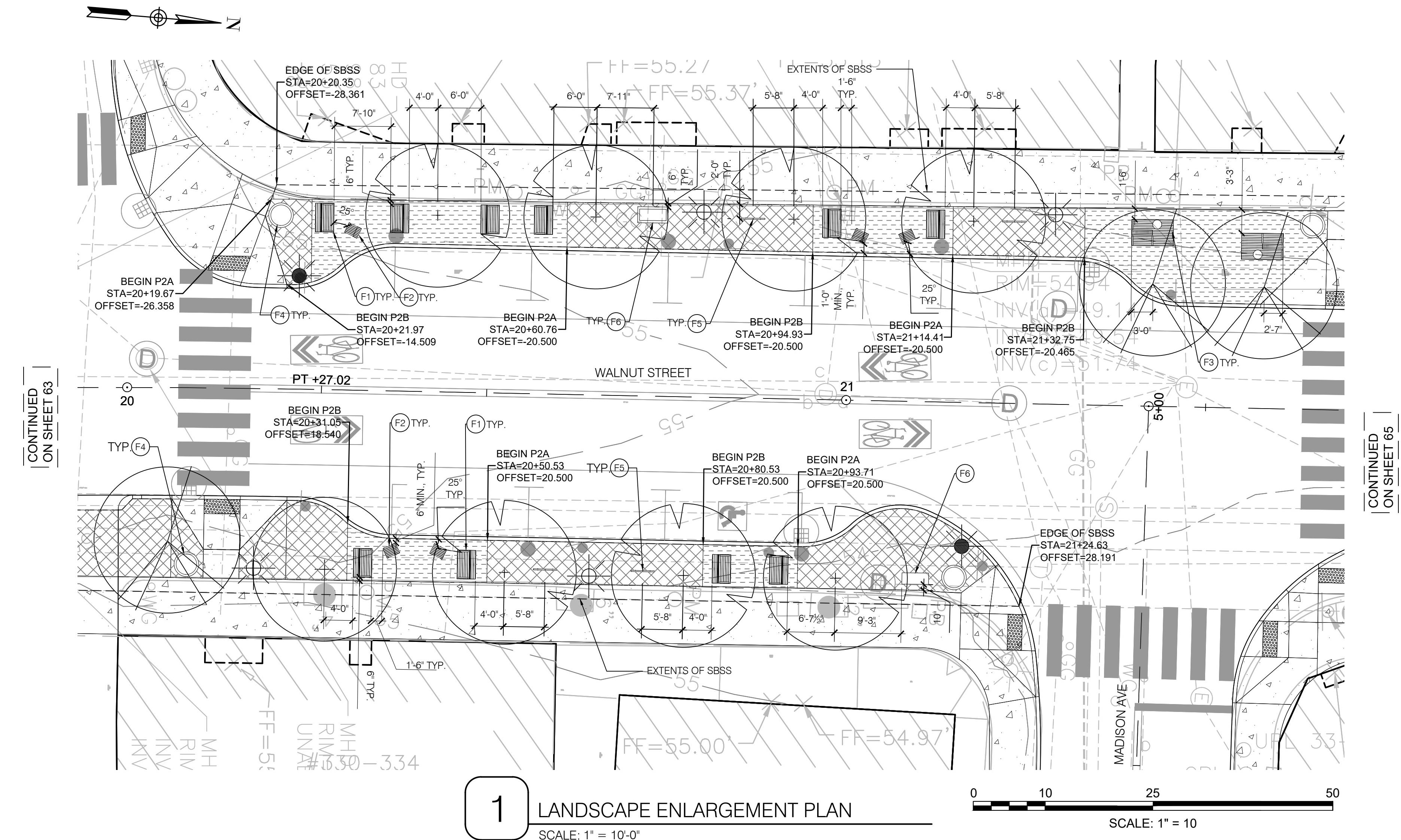
#### PLANTING LEGEND

- (A#) TREE TYPE A: GYMNOCLADUS DIOICUS 'STATELY MANOR', 3-3.5" CAL., (TOTAL OF 10)
- (B#) TREE TYPE B: BLEND OF ULMUS VALLEY FORGE, 'PRINCETON', & 'ACCOLADE', 3-3.5" CAL., (TOTAL OF 11)
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- (E#) TREE TYPE E: BLEND OF ACER RUBRUM 'OCTOBER GLORY' AND 'RED SUNSET', 2.5-3" CAL., (TOTAL OF 11)
- EXISTING TREE TO REMAIN

#### LEGEND

- |                          |                  |                  |                               |                                       |   |  |
|--------------------------|------------------|------------------|-------------------------------|---------------------------------------|---|--|
| (P1) 6/67                | (P2A) 7/67       | (P2B) 8/67       | (P3) 9/67                     | (P4) 1/66                             | (P5) 3/65   | (P6) 5/65  |
| C.I.P. CONCRETE PAVEMENT | PAVER LAYOUT P2A | PAVER LAYOUT P2B | PAVER LAYOUT P3               | COLORED TEXTURIZED DECORATIVE SURFACE | PARK BENCH TYPE 'A' - SINGLE BENCH                              | PARK BENCH TYPE 'B' - FIXED BISTRO   |
| (F1) 6/65                | (F2) 2/65        | (F3) 4/65        | (F4) 6/65                     | (F5) 5/65                             | (F6) 6/65   | PARK BENCH TYPE 'C' - DOUBLE BENCH   |
| (TOTAL OF 17)            | (TOTAL OF 8)     | (TOTAL OF 6)     | MOVABLE PLANNER (TOTAL OF 12) | BIKE RACK (TOTAL OF 9)                | RELOCATED BIG BELLY TRASH AND RECYCLING RECEPTACLE (TOTAL OF 7) | PEDESTRIAN LIGHT FIXTURE. SEE 10/67 FOR HAND HOLE LOC. SEE ELEC. FOR POLE & FIXTURE LOC. |
|                          |                  |                  |                               |                                       |   | ROADWAY LIGHT FIXTURE. SEE 10/67 FOR HAND HOLE LOC. SEE ELEC. FOR POLE & FIXTURE LOC.    |
|                          |                  |                  |                               |                                       |   | — LIMIT OF WORK  |





## PLANTING LEGEND

-  A# TREE TYPE A: GYMNOCLADUS DIOICUS 'STATELY MANOR', 3-3.5" CAL., (TOTAL OF 10)
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  -  EXISTING TREE TO REMAIN

## LEGEND

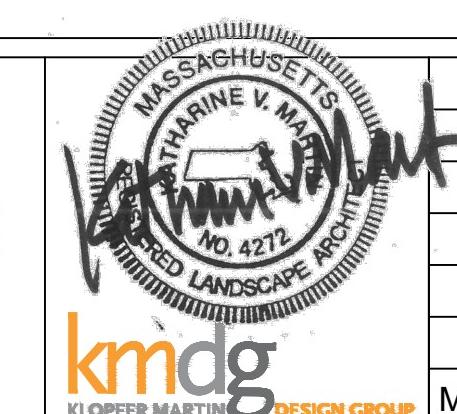
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|---|-----|---|---|---------------------------------------|
|  | P1  |  |  | C.I.P. CONCRETE PAVEMENT              |
|  | P2A |  | PAVER LAYOUT P2A  |                                       |
|  | P2B |  | PAVER LAYOUT P2B  |                                       |
|  | P3  |  | PAVER LAYOUT P3   |                                       |
|  | P4  |  |  | COLORED TEXTURIZED DECORATIVE SURFACE |
|   |     |   |   |                                       |
|  | F1  |  | PARK BENCH TYPE 'A' - SINGLE BENCH<br>(TOTAL OF 17)                                   |                                       |
|  | F2  |  | PARK BENCH TYPE 'B' - FIXED BISTRO<br>CHAIR (TOTAL OF 8)                              |                                       |
|  | F3  |  | PARK BENCH TYPE 'C' - DOUBLE BENCH<br>(TOTAL OF 6)                                    |                                       |
|  | F4  |  | MOVABLE PLANTER (TOTAL OF 12)   |                                       |
|  | F5  |  | BIKE RACK (TOTAL OF 9)  |                                       |
|  | F6  |  | RELOCATED BIG BELLY TRASH AND<br>RECYCLING RECEPTACLE (TOTAL OF 7)                    |                                       |



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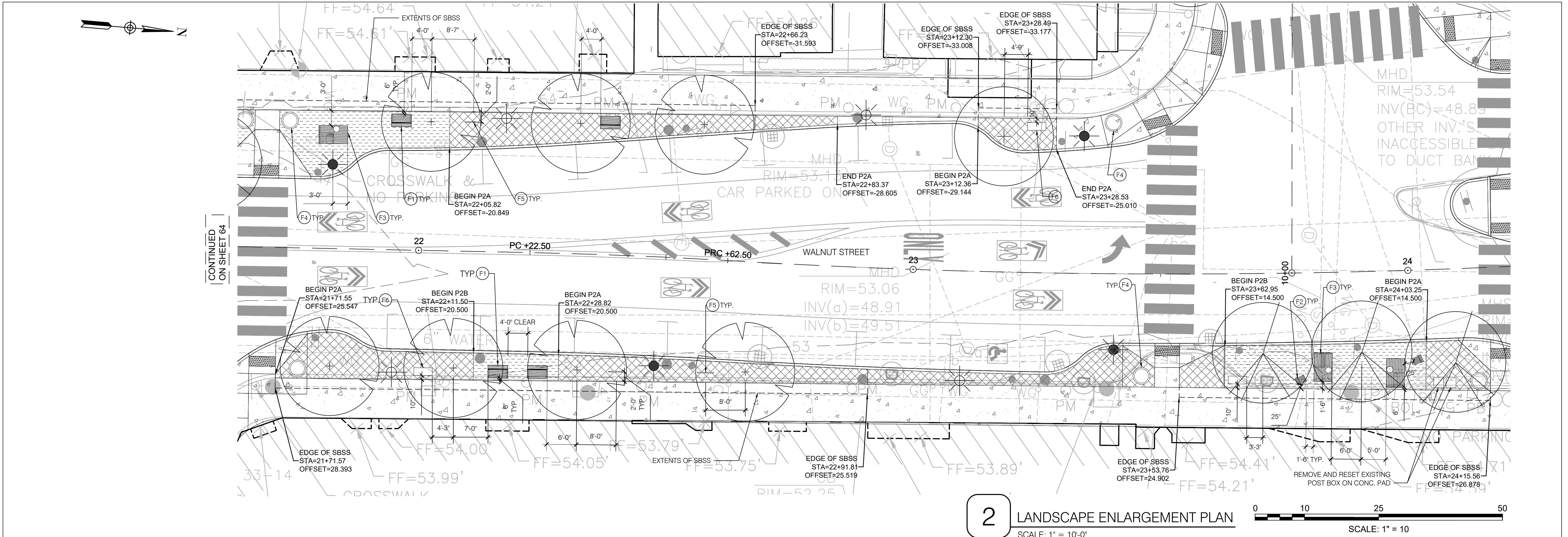
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# REHABILITATION OF WALNUT STREET NEWTON, MASSACHUSETTS

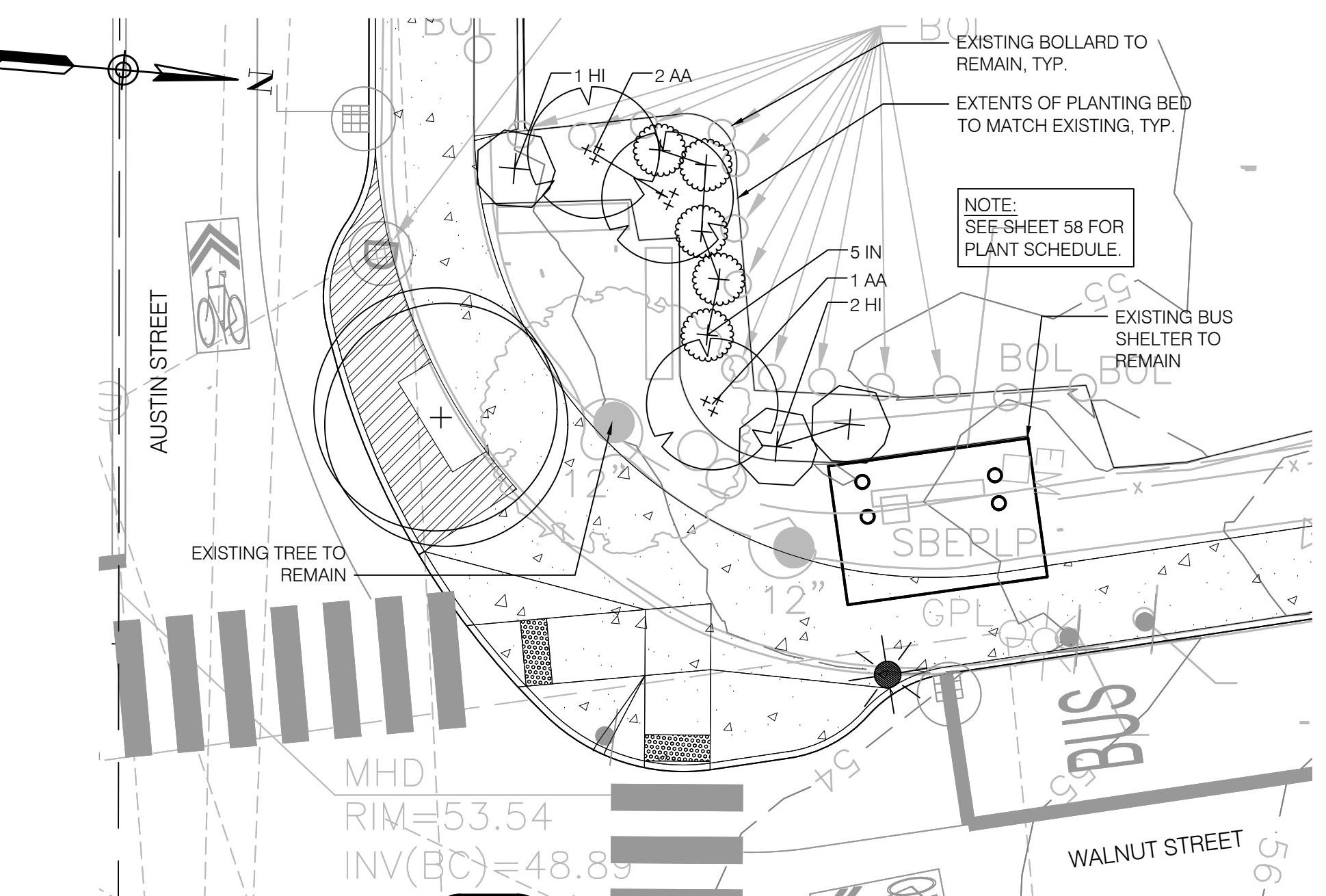
# LANDSCAPE ENLARGEMENT PLAN - 2

Sheet No.

64



Drawing file: KL\_Projects\kld\17178 Newtonville\CAD\Newtonville LANDSCAPE ENLARGEMENT\_SHEETS.dwg Plot Date: Aug 01 2018 11:13pm



#### PLANTING LEGEND

- (A#) TREE TYPE A: GYMNOCLADUS DIOICUS 'STATELY MANOR', 3-3.5" CAL., (TOTAL OF 10)
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- EXISTING TREE TO REMAIN

#### LEGEND

- |                          |                  |                  |                 |                                       |   |  |
|--------------------------|------------------|------------------|-----------------|---------------------------------------|---|--|
| (P1) 6 67                | (P2A) 7 67       | (P2B) 8 67       | (P3) 9 67       | (P4) 1 66                             | (P5) 3 69   | (P6) 5 69  |
| C.I.P. CONCRETE PAVEMENT | PAVER LAYOUT P2A | PAVER LAYOUT P2B | PAVER LAYOUT P3 | COLORED TEXTURIZED DECORATIVE SURFACE | PARK BENCH TYPE 'A' - SINGLE BENCH                              | PARK BENCH TYPE 'B' - FIXED BISTRO   |
|                          |                  |                  |                 |                                       | CHAIR (TOTAL OF 8)  | PARK BENCH TYPE 'C' - DOUBLE BENCH   |
|                          |                  |                  |                 |                                       | MOVABLE PLANNER (TOTAL OF 12)                                   | BIKE RACK (TOTAL OF 9)   |
|                          |                  |                  |                 |                                       | RELOCATED BIG BELLY TRASH AND RECYCLING RECEPTACLE (TOTAL OF 7) | PEDESTRIAN LIGHT FIXTURE. SEE 10/67 FOR HAND HOLE LOC. SEE ELEC. FOR POLE & FIXTURE LOC. |
|                          |                  |                  |                 |                                       |   | ROADWAY LIGHT FIXTURE. SEE 10/67 FOR HAND HOLE LOC. SEE ELEC. FOR POLE & FIXTURE LOC.    |
|                          |                  |                  |                 |                                       |   | LIMIT OF WORK  |
- SCALE: 1" = 10'



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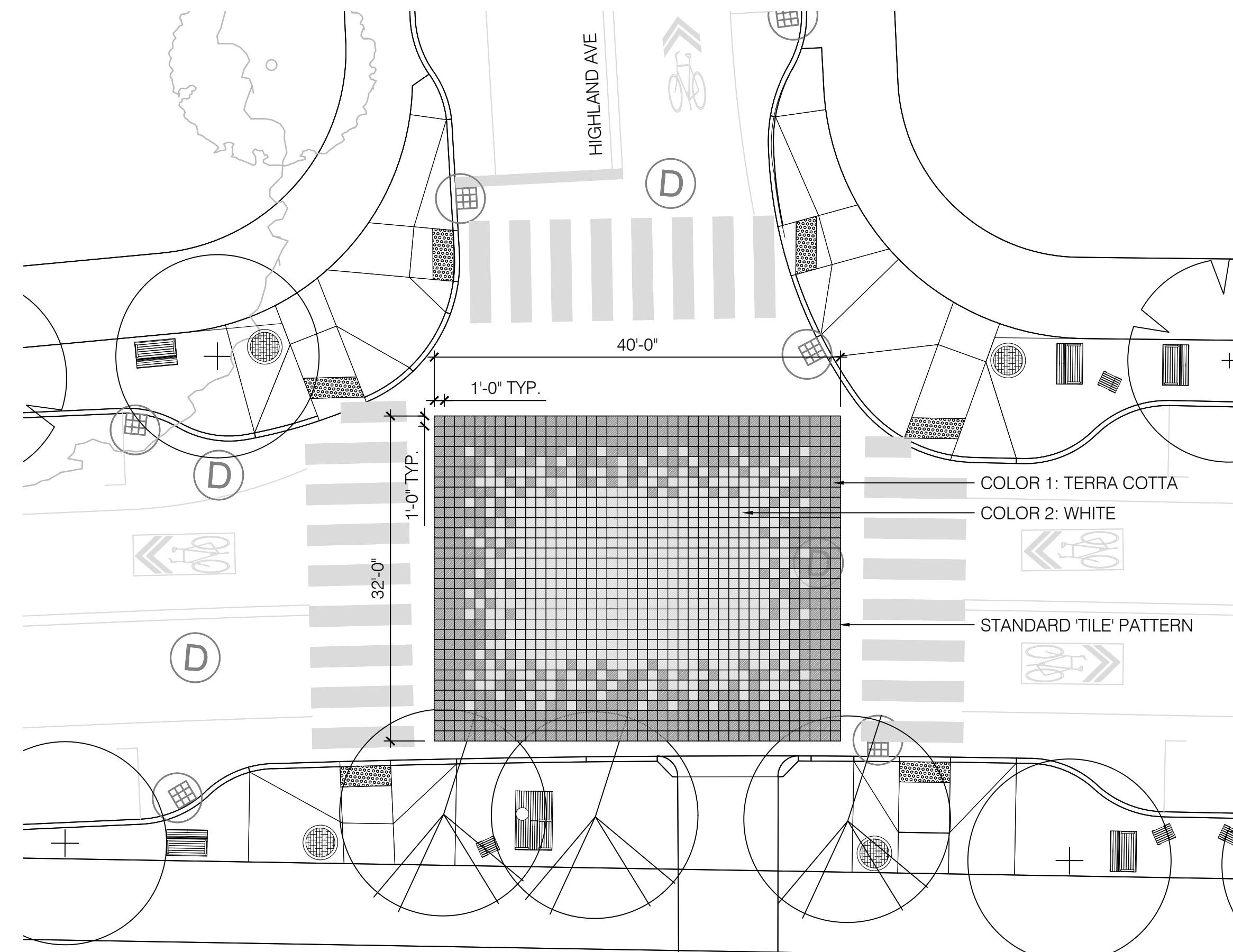
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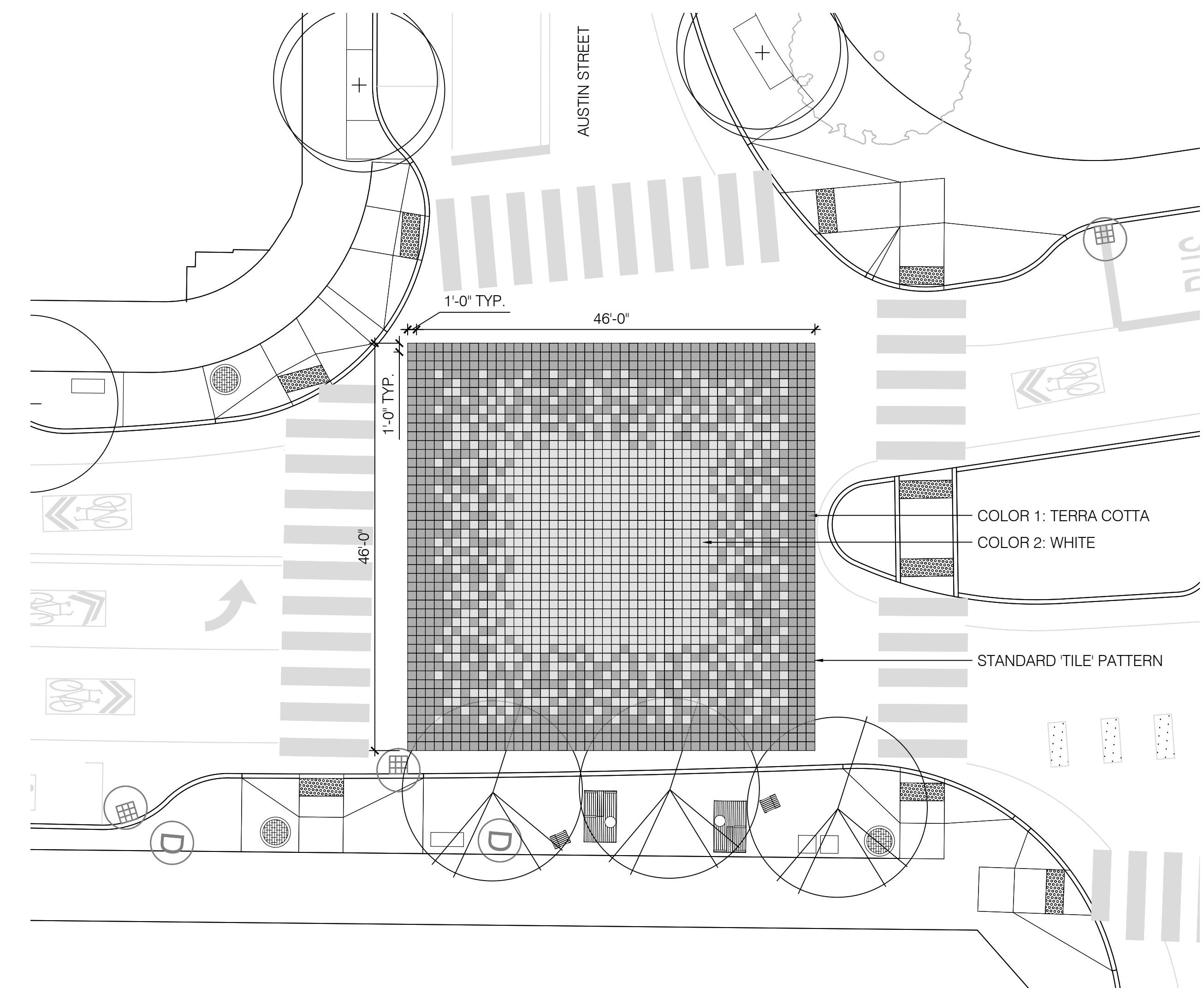
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**REHABILITATION OF WALNUT STREET  
NEWTON, MASSACHUSETTS**  
**LANDSCAPE ENLARGEMENT PLAN - 3**

Sheet No.  
**65**



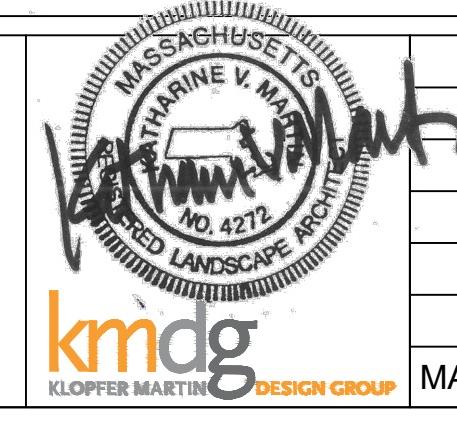
**2** COLORED TEXTURIZED DECORATIVE SURFACE - HIGHLAND AVE  
SCALE: 1" = 10'-0"



**1** COLORED TEXTURIZED DECORATIVE SURFACE - AUSTIN STREET  
SCALE: 1" = 10'-0"



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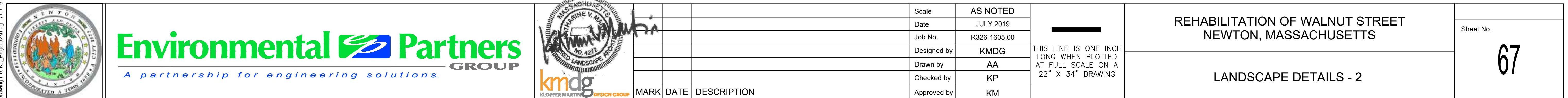
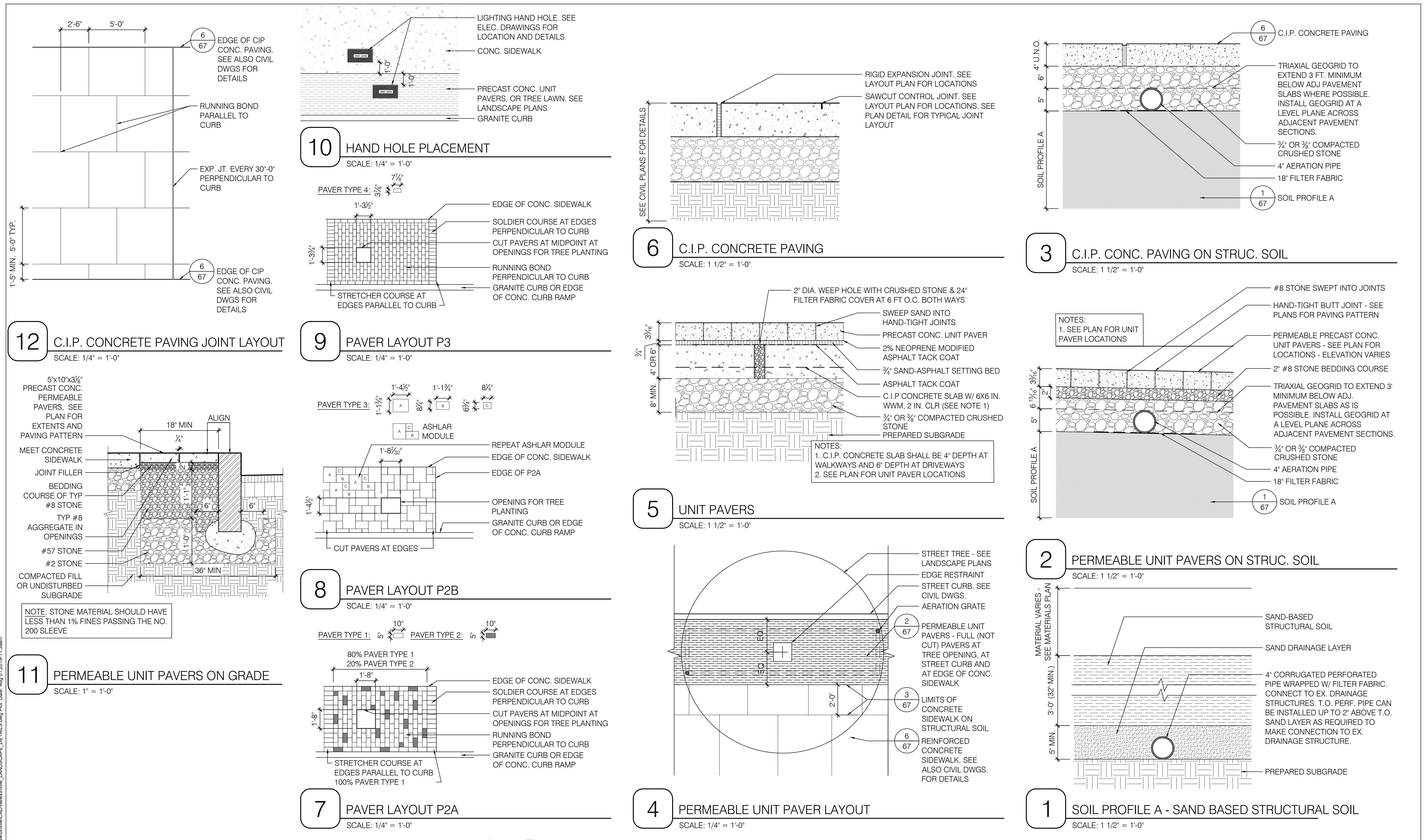
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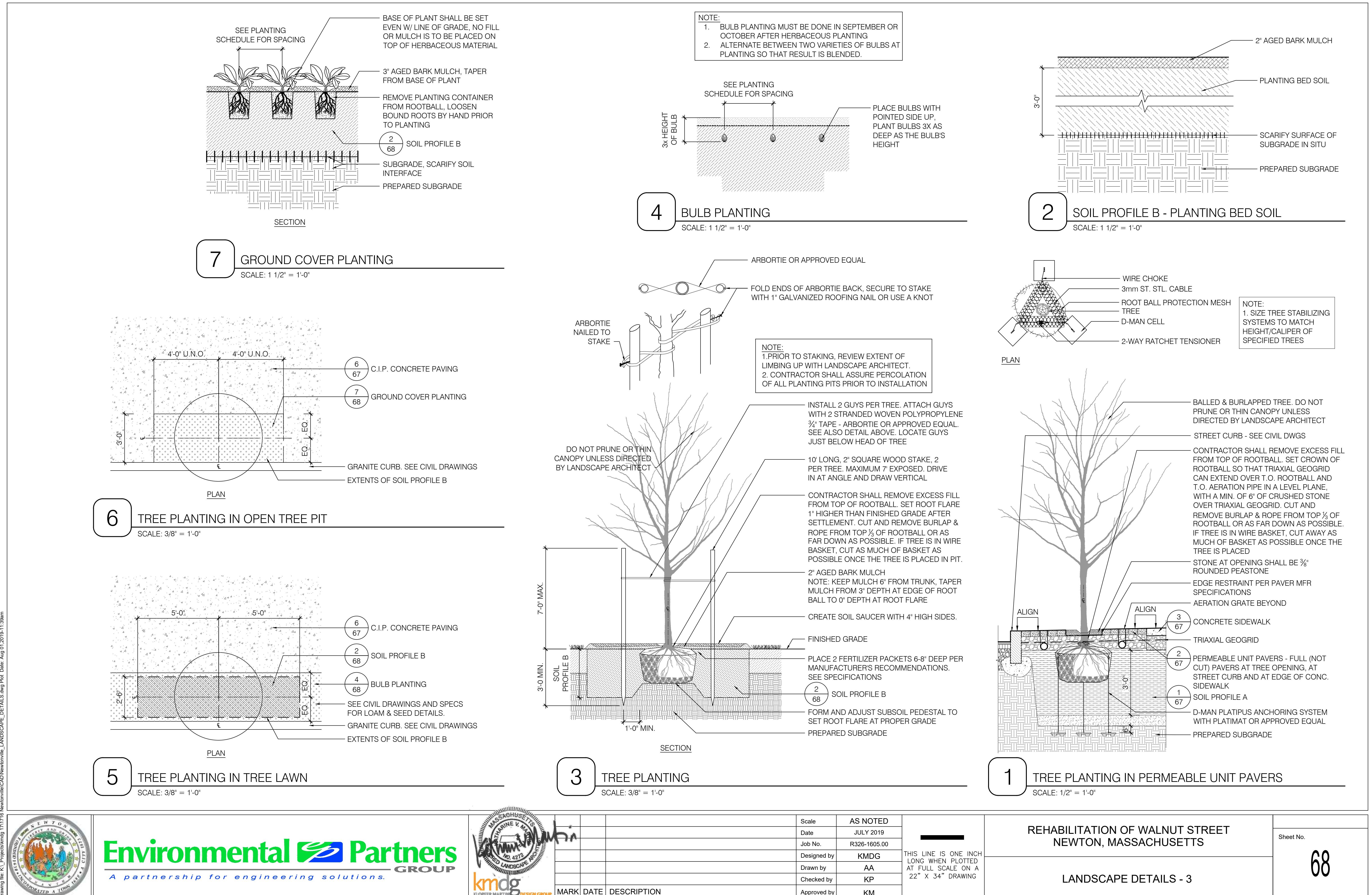
REHABILITATION OF WALNUT STREET  
NEWTON, MASSACHUSETTS

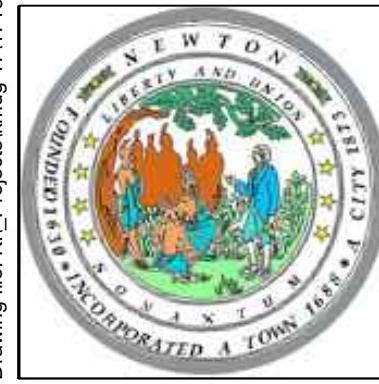
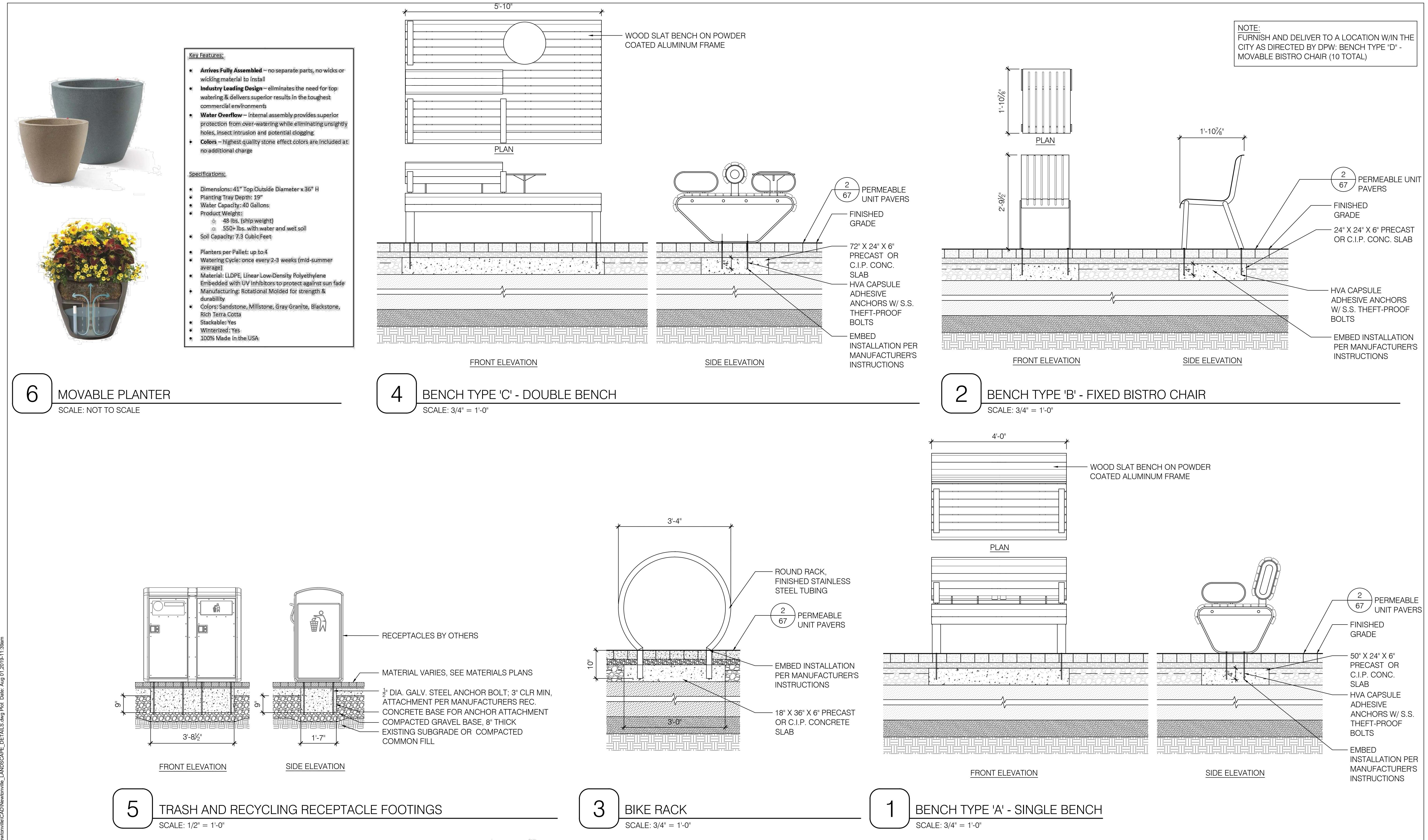
LANDSCAPE DETAILS - 1

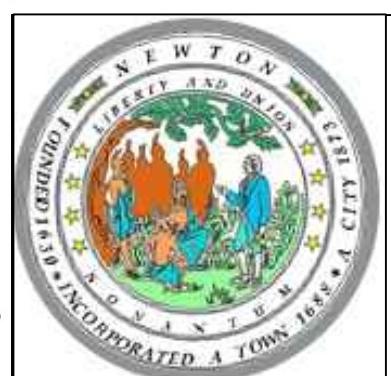
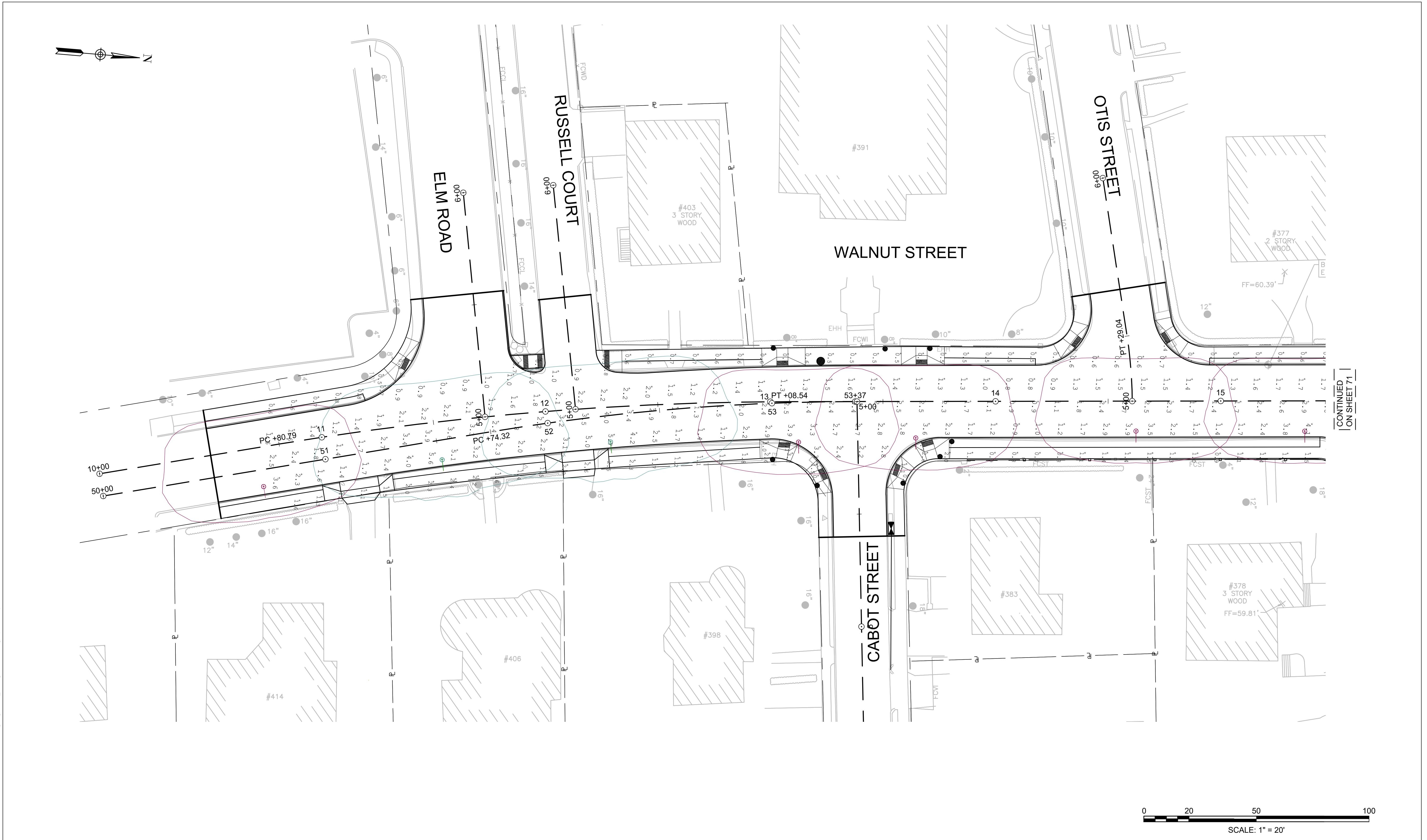
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66

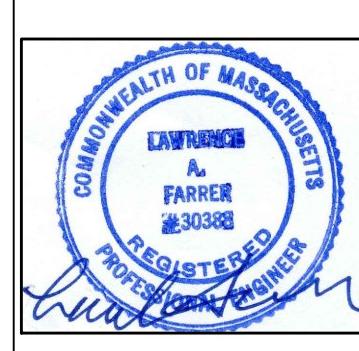








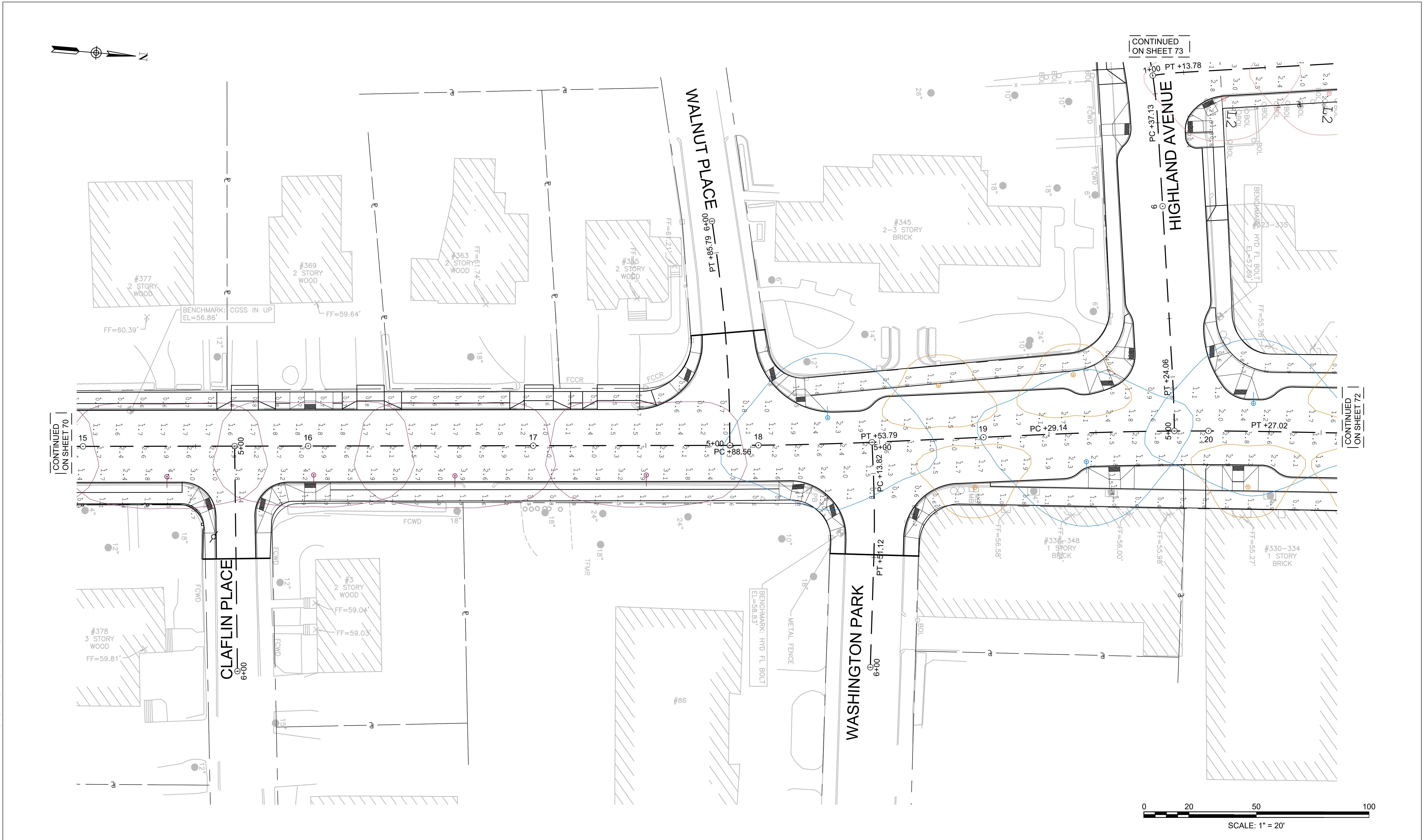
**Environmental Partners**  
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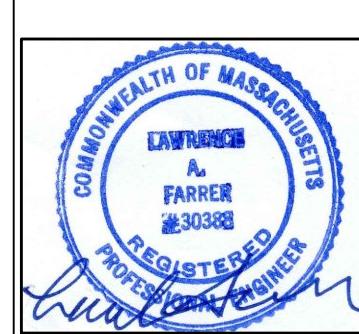
MARK DATE DESCRIPTION

**70**

AS NOTED



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MARK DATE DESCRIPTION

Scale	AS NOTED
Date	JULY 2019
Job No.	R326-1605.00
Designed by	
Drawn by	MC
Checked by	LAF
Approved by	

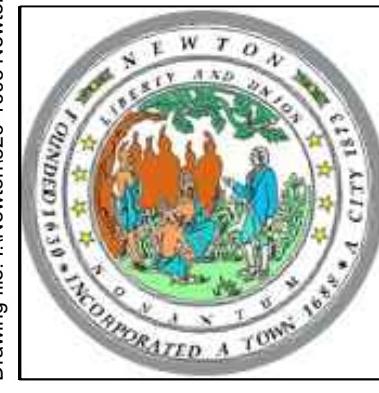
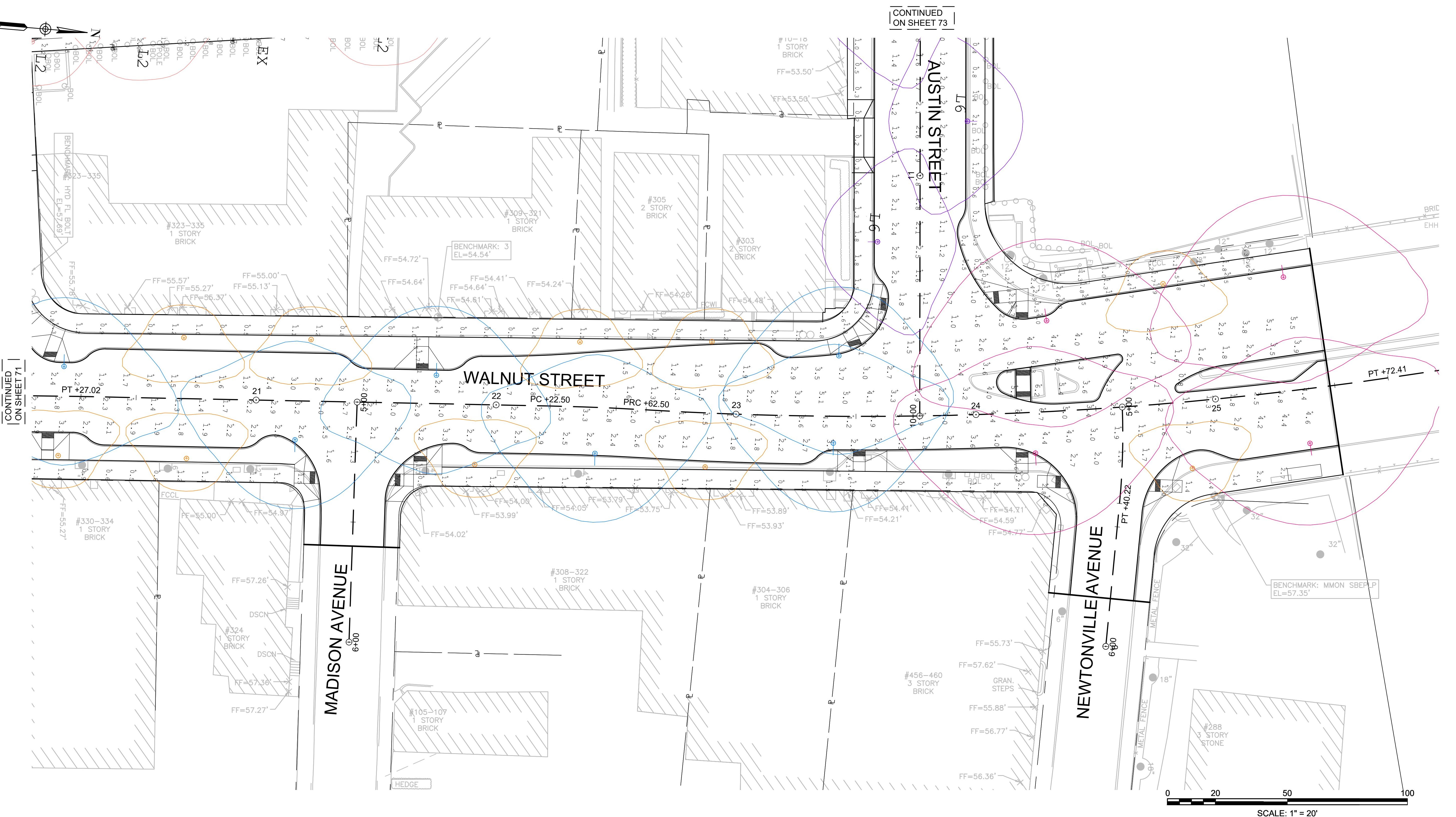
THIS LINE IS ONE INCH LONG WHEN PLOTTED AT FULL SCALE ON A 22" X 34" DRAWING

REHABILITATION OF WALNUT STREET  
NEWTON, MASSACHUSETTS  
SITE PHOTOMETRIC PLANS - 02

Sheet No.  
**71**

AS NOTED

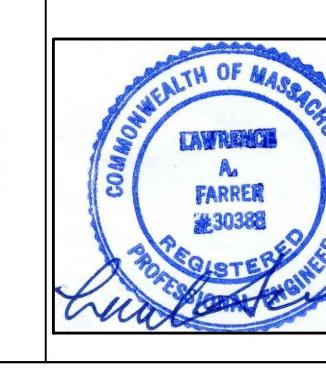
Drawing No.: 1.1Newton\_1325-1005 Newton - Rehabilitation of Walnut Street@CADSheet01 / - Eignung - Photo\_rev.dwg Plot Date: Aug 02, 2019 3:30pm



# Environmental Partners

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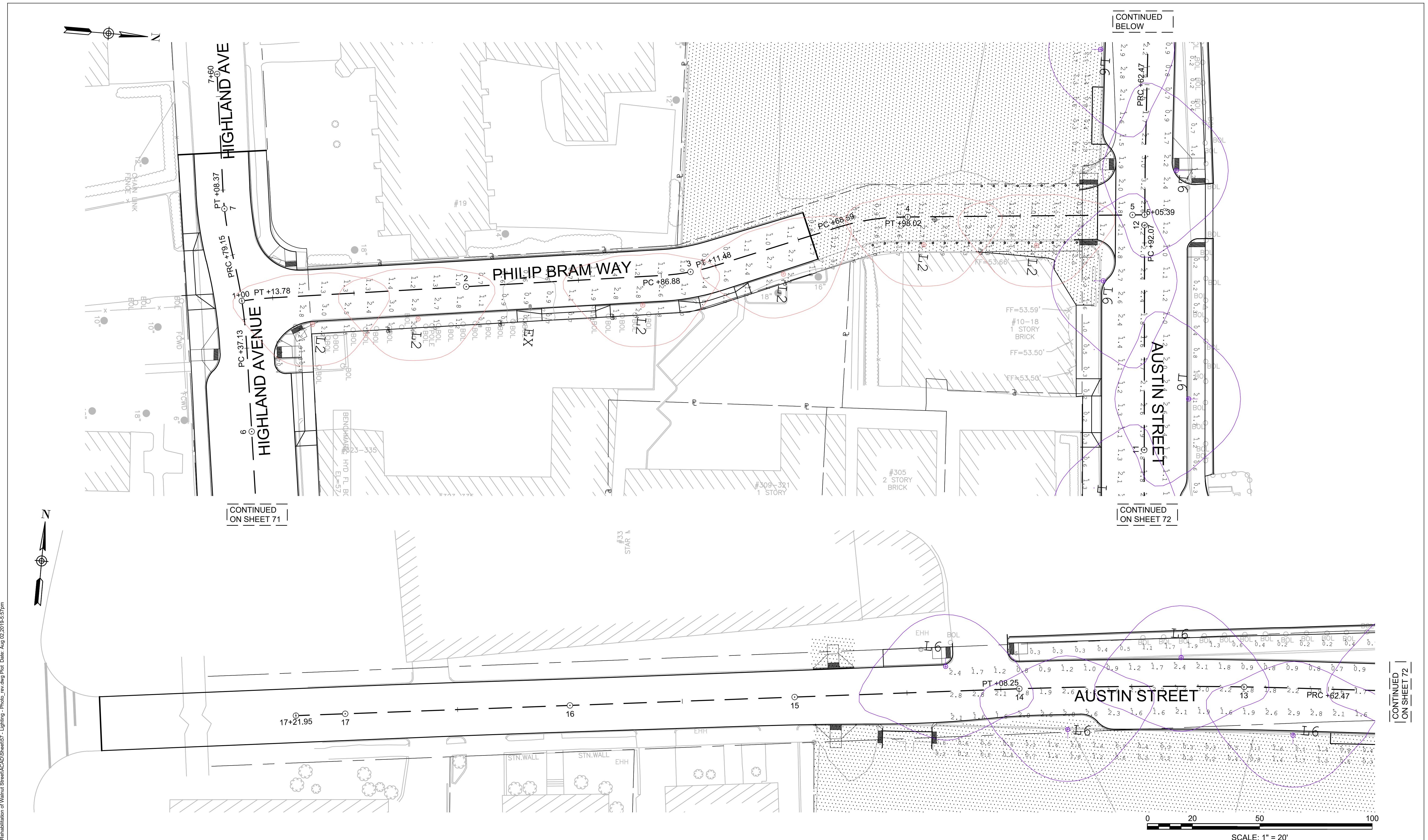
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			Date	JULY 2019
			Job No.	R326-1605.00
			Designed by	
			Drawn by	MC
			Checked by	LAF
MARK	DATE	DESCRIPTION	Approved by	

THIS LINE IS ONE INCH  
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AT FULL SCALE ON A  
22" X 34" DRAWING

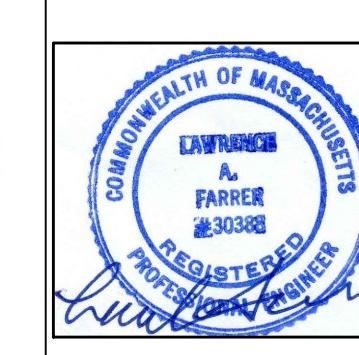
## REHABILITATION OF WALNUT STREET NEWTON, MASSACHUSETTS

## SITE PHOTOMETRIC PLANS - 03

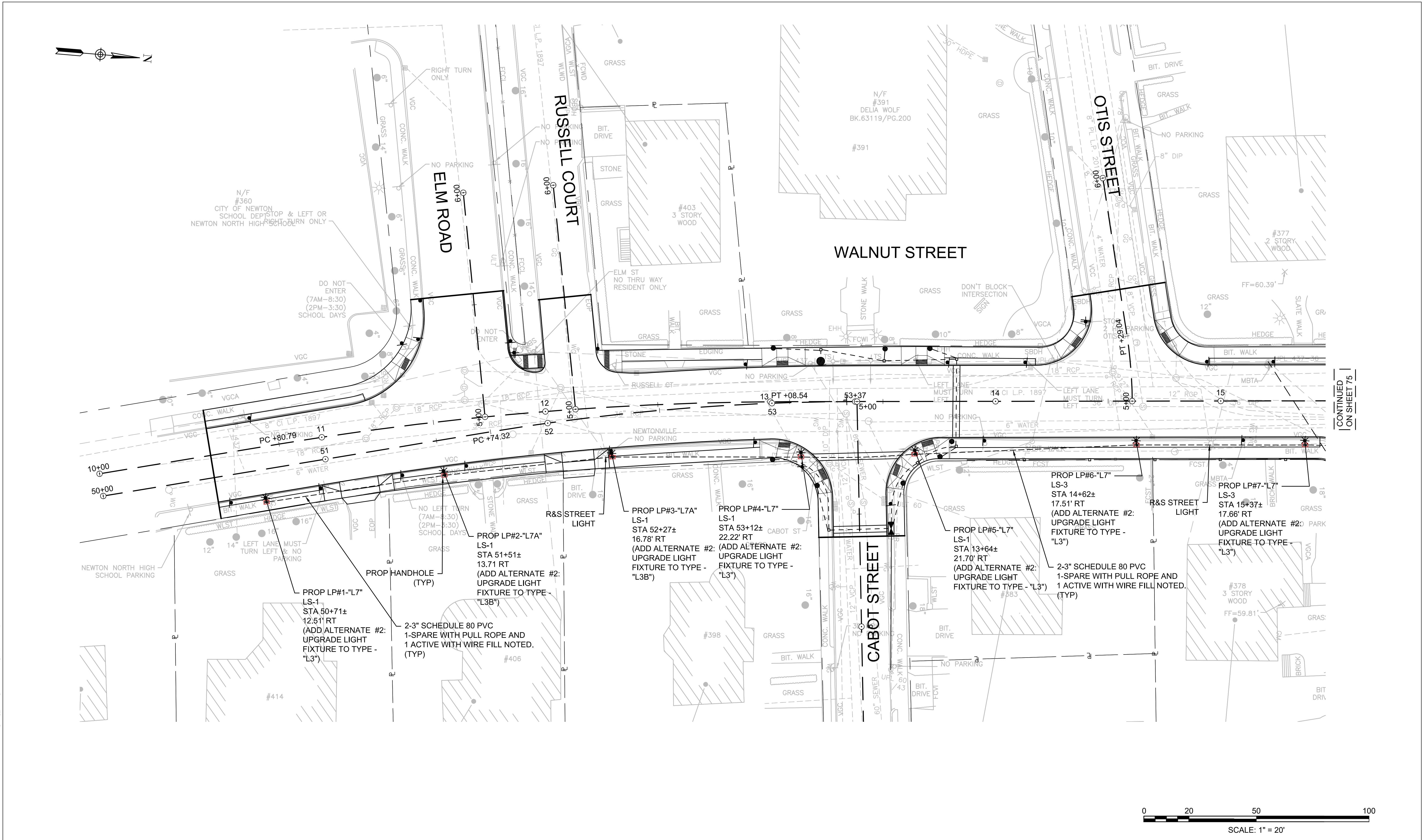
Sheet No. 7



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MARK	DATE	DESCRIPTION



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MARK DATE DESCRIPTION

Scale AS NOTED

Date JULY 2019

Job No. R326-1605.00

Designed by

Drawn by MC

Checked by LAF

Approved by

THIS LINE IS ONE INCH  
LONG WHEN PLOTTED  
AT FULL SCALE ON A  
22" X 34" DRAWING

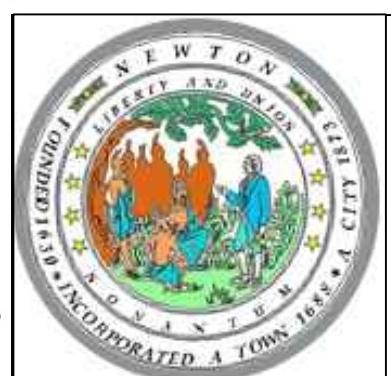
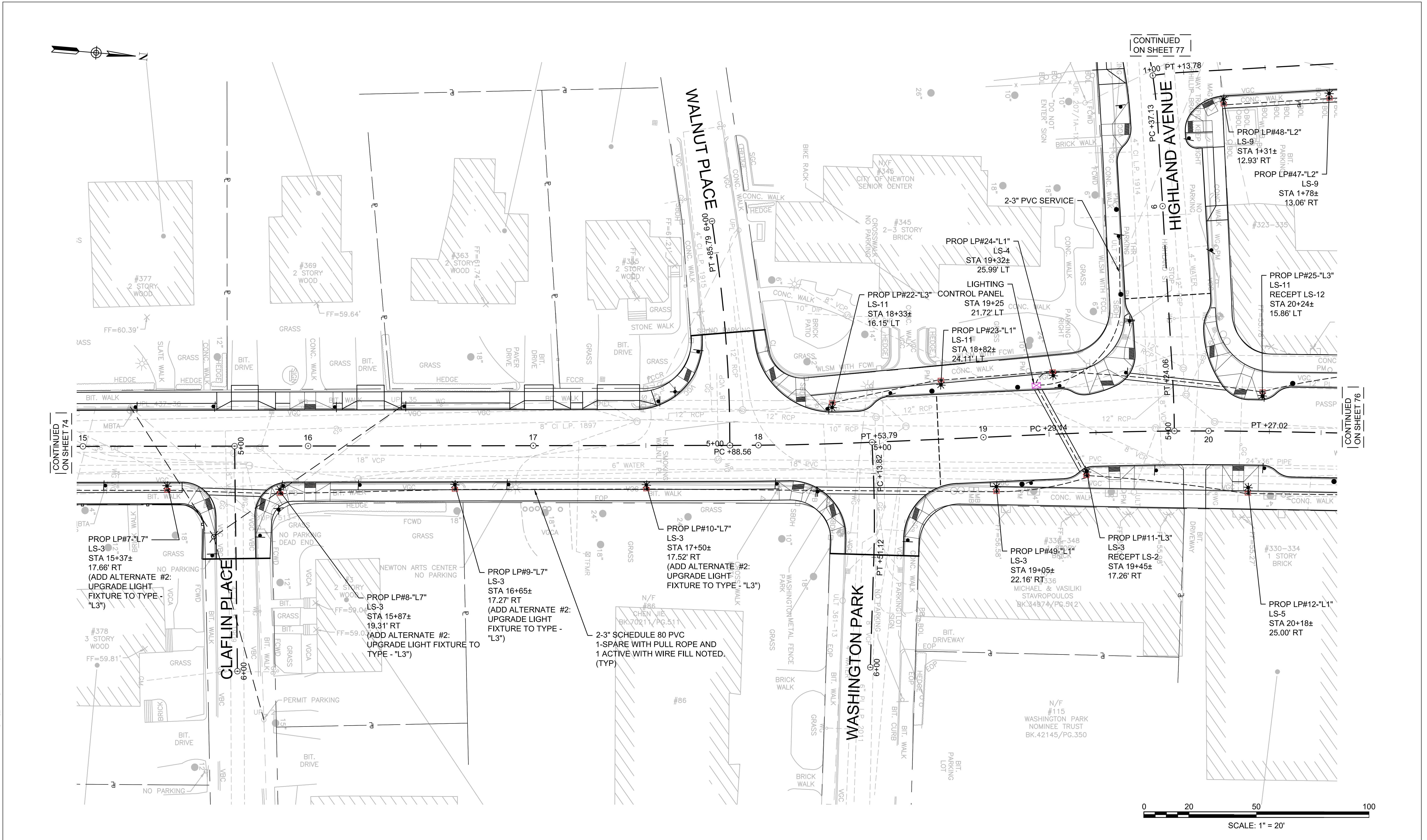
**REHABILITATION OF WALNUT STREET  
NEWTON, MASSACHUSETTS**

**STREET LIGHTING PLANS - 01**

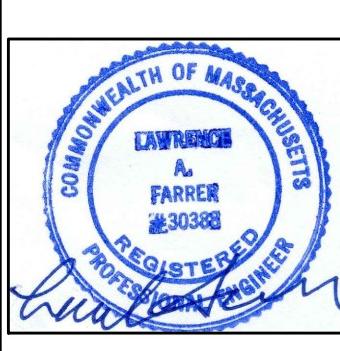
Sheet No.

**74**

AS NOTED



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MARK DATE DESCRIPTION

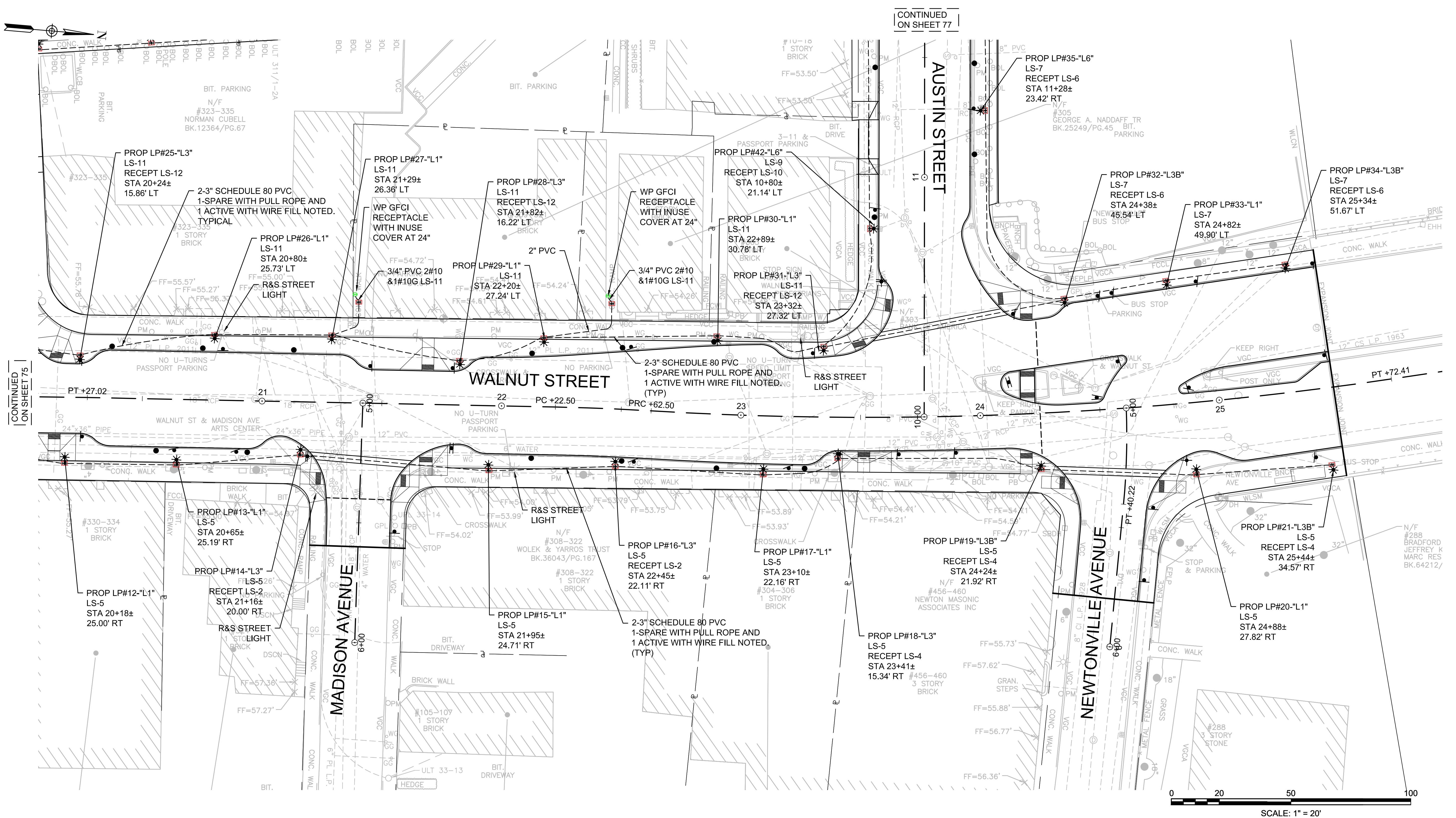
Scale	AS NOTED
Date	JULY 2019
Job No.	R326-1605.00
Designed by	
Drawn by	MC
Checked by	LAF
Approved by	

THIS LINE IS ONE INCH  
LONG WHEN PLOTTED  
AT FULL SCALE ON A  
22" X 34" DRAWING

REHABILITATION OF WALNUT STREET  
NEWTON, MASSACHUSETTS  
STREET LIGHTING PLANS - 02

Sheet No.  
**75**

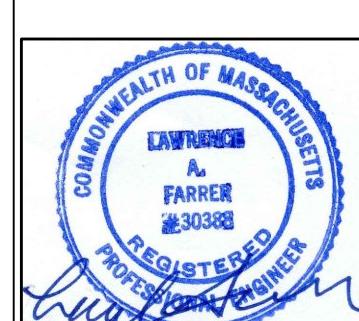
AS NOTED



# Environmental Partners GROUP

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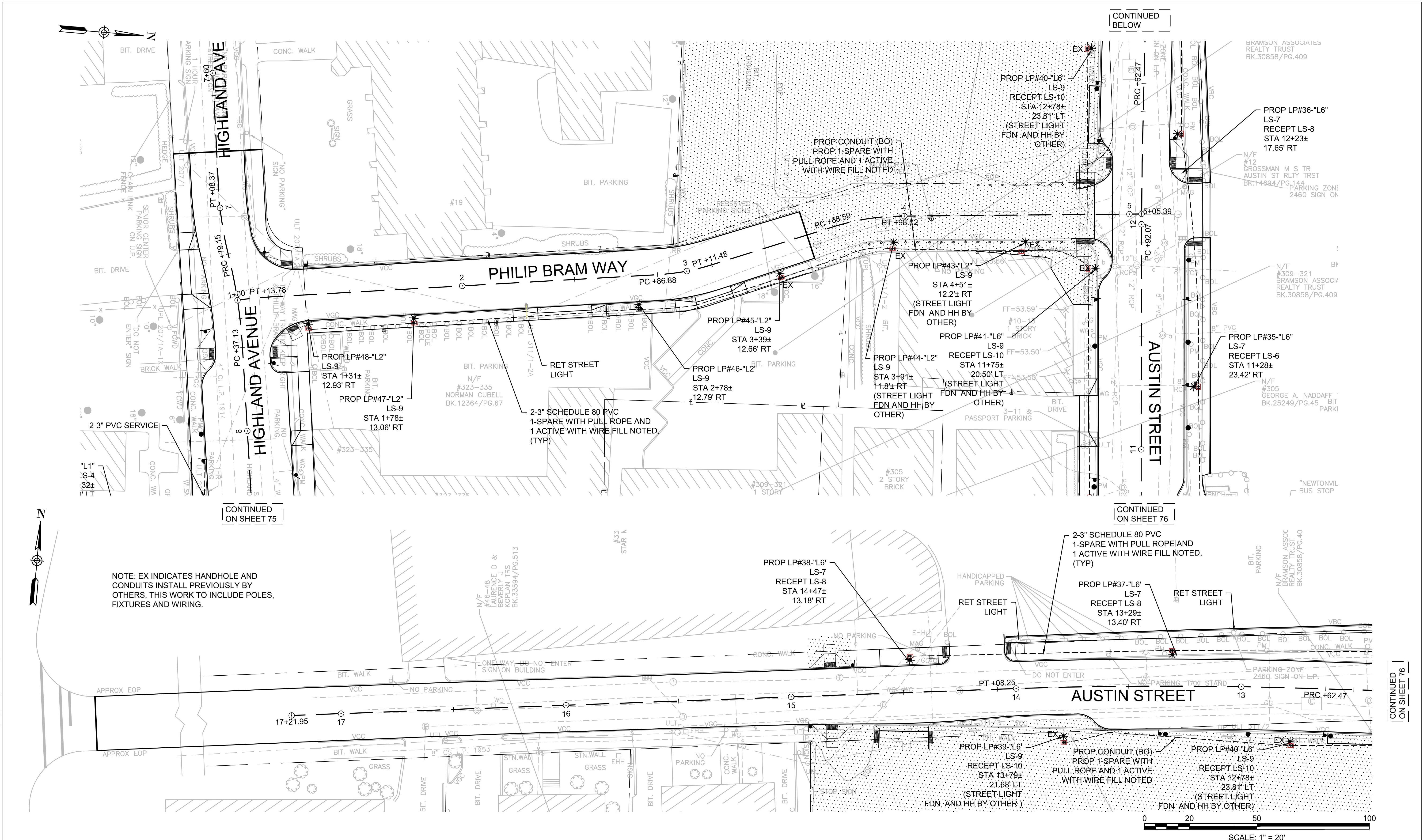


			Scale	AS NOTED
			Date	JULY 2019
			Job No.	R326-1605.00
			Designed by	
			Drawn by	MC
			Checked by	LAF
MARK	DATE	DESCRIPTION	Approved by	

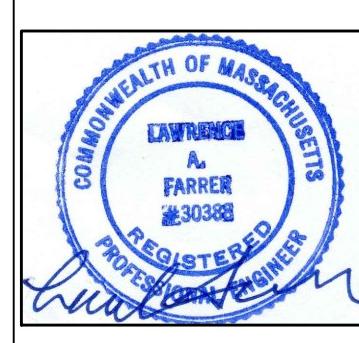
# REHABILITATION OF WALNUT STREET NEWTON, MASSACHUSETTS

## STREET LIGHTING PLANS - 03

Sheet No.



**Environmental Partners GROUP**  
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MARK DATE DESCRIPTION

MARK	DATE	DESCRIPTION

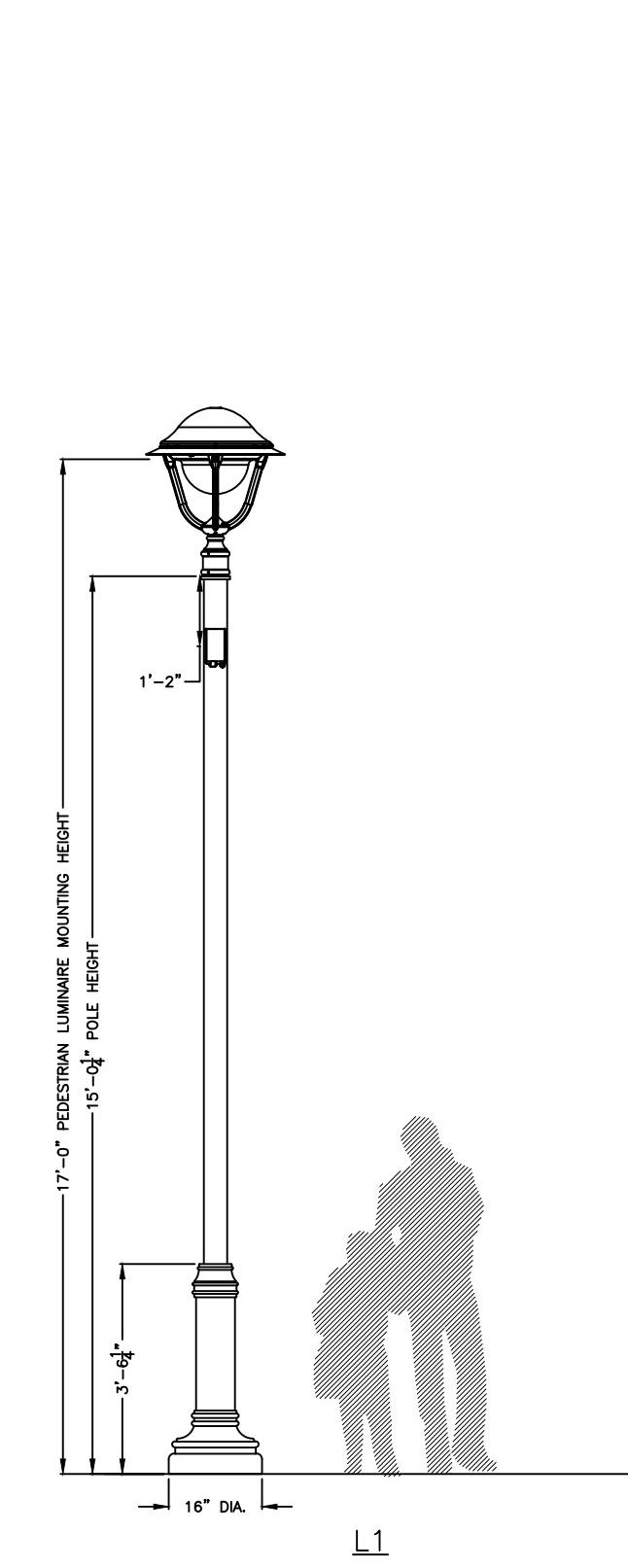
The seal of Newton, Massachusetts, is circular. It features a central scene depicting three figures under a tree, surrounded by a landscape with a river and mountains. Above the scene, the word "LIBERTY AND UNION" is written in a circular arc. The outer ring of the seal contains the text "THE TOWN OF NEWTON MASSACHUSETTS" at the top and "INCORPORATED A.T. 1688" at the bottom. The entire seal is enclosed in a circular border.

# Environmental Partners

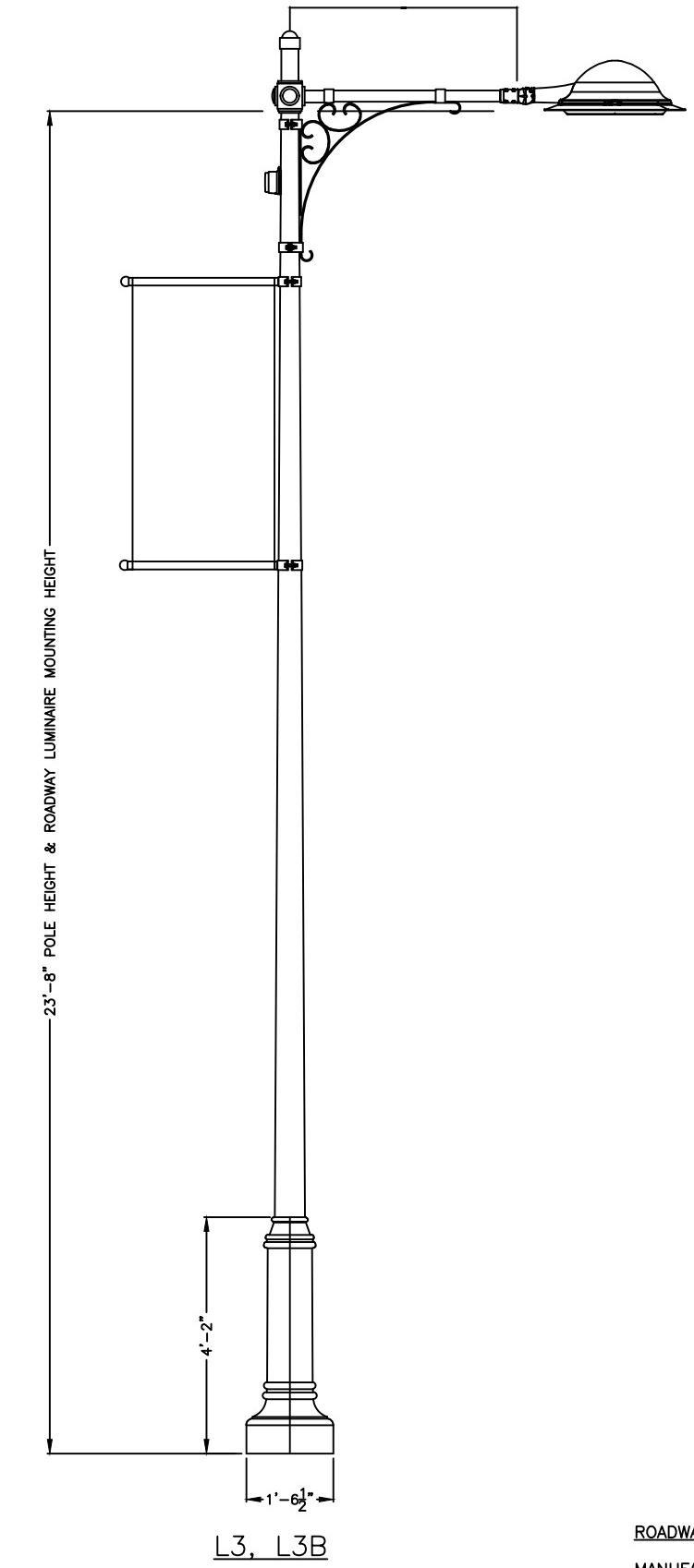
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			Scale	AS NOTED
			Date	JULY 2019
			Job No.	R326-1605.00
			Designed by	T
			Drawn by	MC
			Checked by	LAF
MARK	DATE	DESCRIPTION	Approved by	

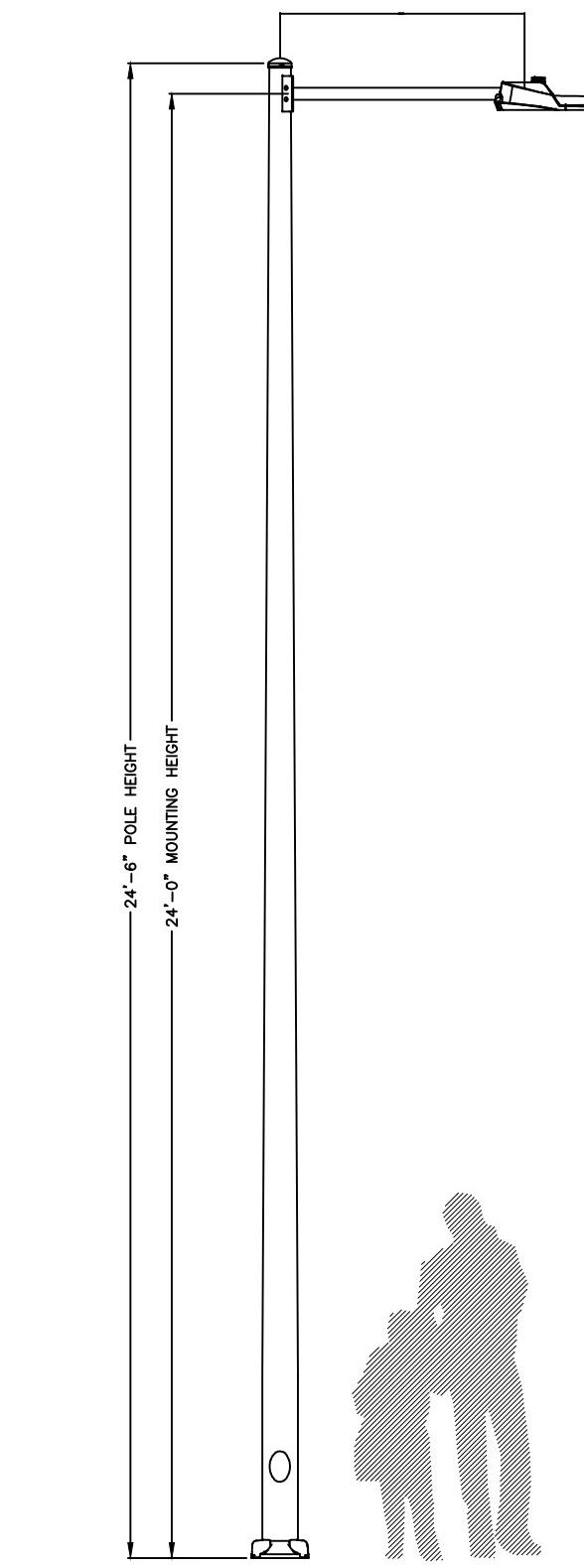


<u>LUMINAIRE SPECIFICATIONS</u>	
MANUFACTURER:	GHISAMESTIERI
STYLE:	JUN SMALL
LIGHT SOURCE:	LED
LED CODE:	A1Y
IES CLASSIFICATION:	TYPE II
WATTAGE:	17W
CURRENT:	700mA
VOLTAGE:	120-277V
CCT:	3000K
FINISH:	GLOSS BLACK
OPTIONS:	<ul style="list-style-type: none"> <li>• POLE-TOP (QF)</li> <li>• TONDA DIFFUSER</li> <li>• TENON ADAPTOR #08-EC1</li> </ul>
CATALOG NO.:	JUN S QF-A1Y-LED-700-2A-



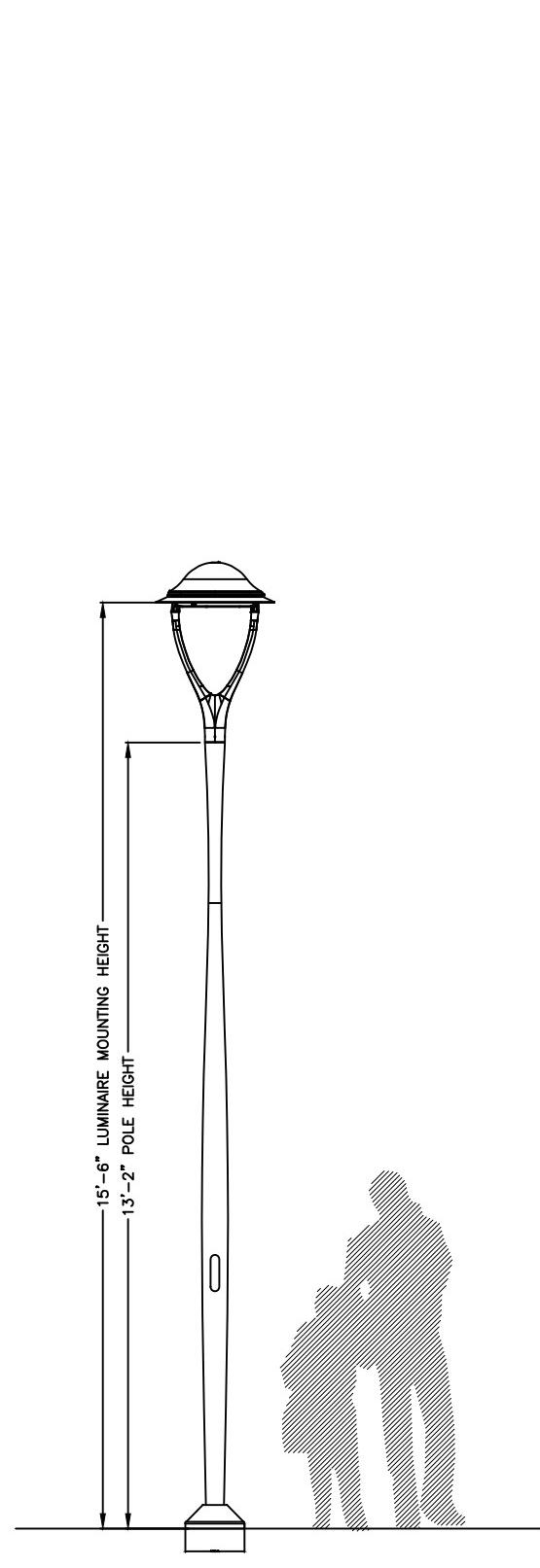
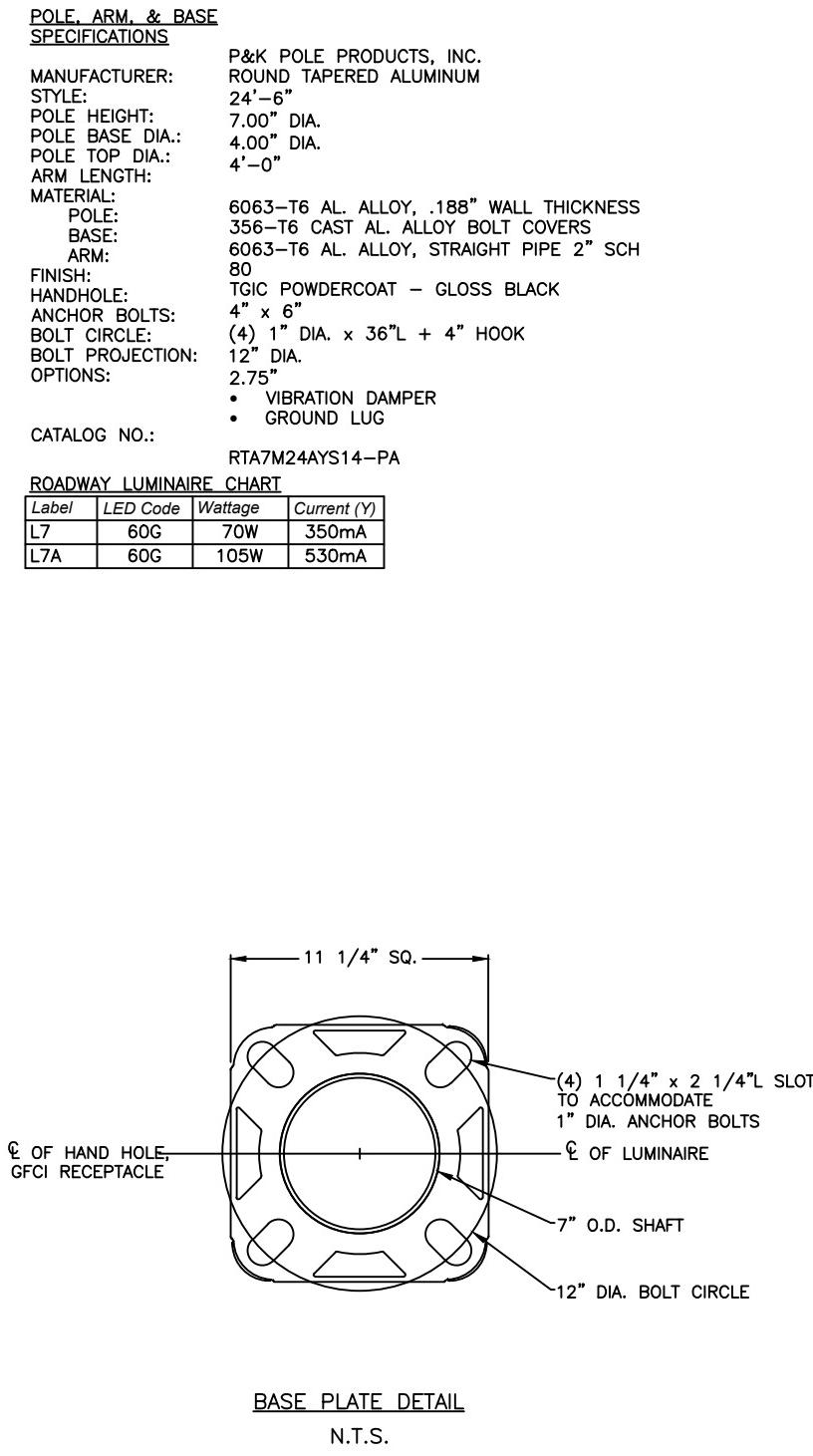
ROADWAY LUMINAIRE SPECIFICATIONS

MANUFACTURER:	GHISAMESTIERI
STYLE:	OSLO LARGE
LIGHT SOURCE:	LED
LED CODE:	SEE CHART (X)
IES CLASSIFICATION:	TYPE III
WATTAGE:	SEE CHART
CURRENT:	SEE CHART (Y)
VOLTAGE:	120-277V
CCT:	3000K
FINISH:	GLOSS BLACK
CATALOG NO.:	OSLO L F-X-LED-Y-3B-3000

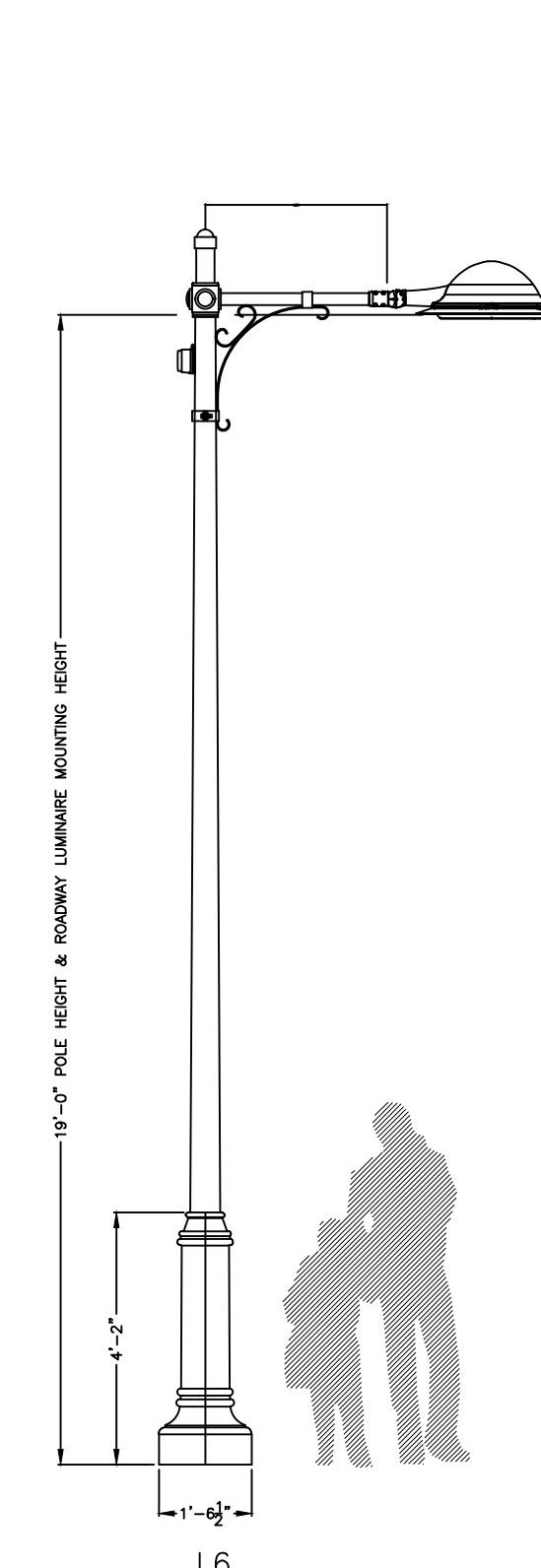


ROADWAY LUMINAIRE SPECIFICATIONS

MANUFACTURER:	LEOTEK ELECTRONICS USA
STYLE:	GREEN COBRA GCL
LIGHT SOURCE:	LED
LED CODE:	60G
IES CLASSIFICATION:	TYPE III
WATTAGE:	SEE CHART
CURRENT:	SEE CHART (Y)
VOLTAGE:	120-277V
CCT:	3000K
FINISH:	GLOSS BLACK
CATALOG NO.:	GCL1-60G-MV-WW-3R-BK

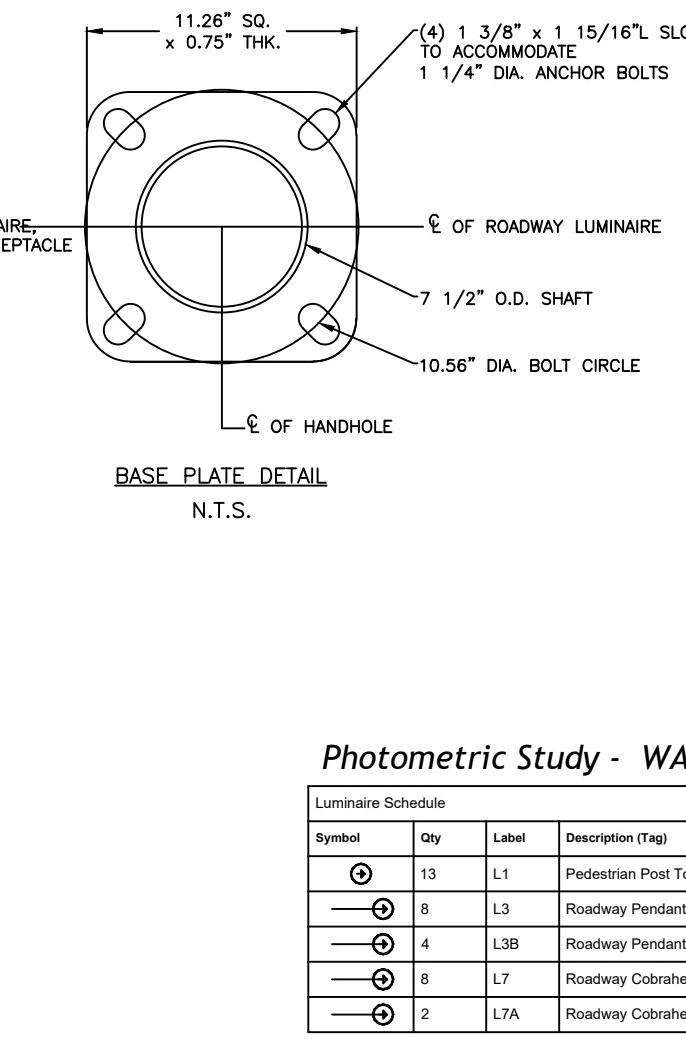


<u>PEDESTRIAN LUMINAIRE SPECIFICATIONS</u>	
MANUFACTURER:	GHISAMESTIERI
STYLE:	JUN SMALL
LIGHT SOURCE:	LED
LED CODE:	A2Y
IES CLASSIFICATION:	TYPE II
WATTAGE:	35W
CURRENT:	700mA
VOLTAGE:	120-277V
CCT:	3000K
FINISH:	GLOSS BLACK
OPTIONS:	<ul style="list-style-type: none"> <li>• POLE-TOP (BF)</li> </ul>
CATALOG NO.:	JUN S BF-A2Y-LED-700-2A-

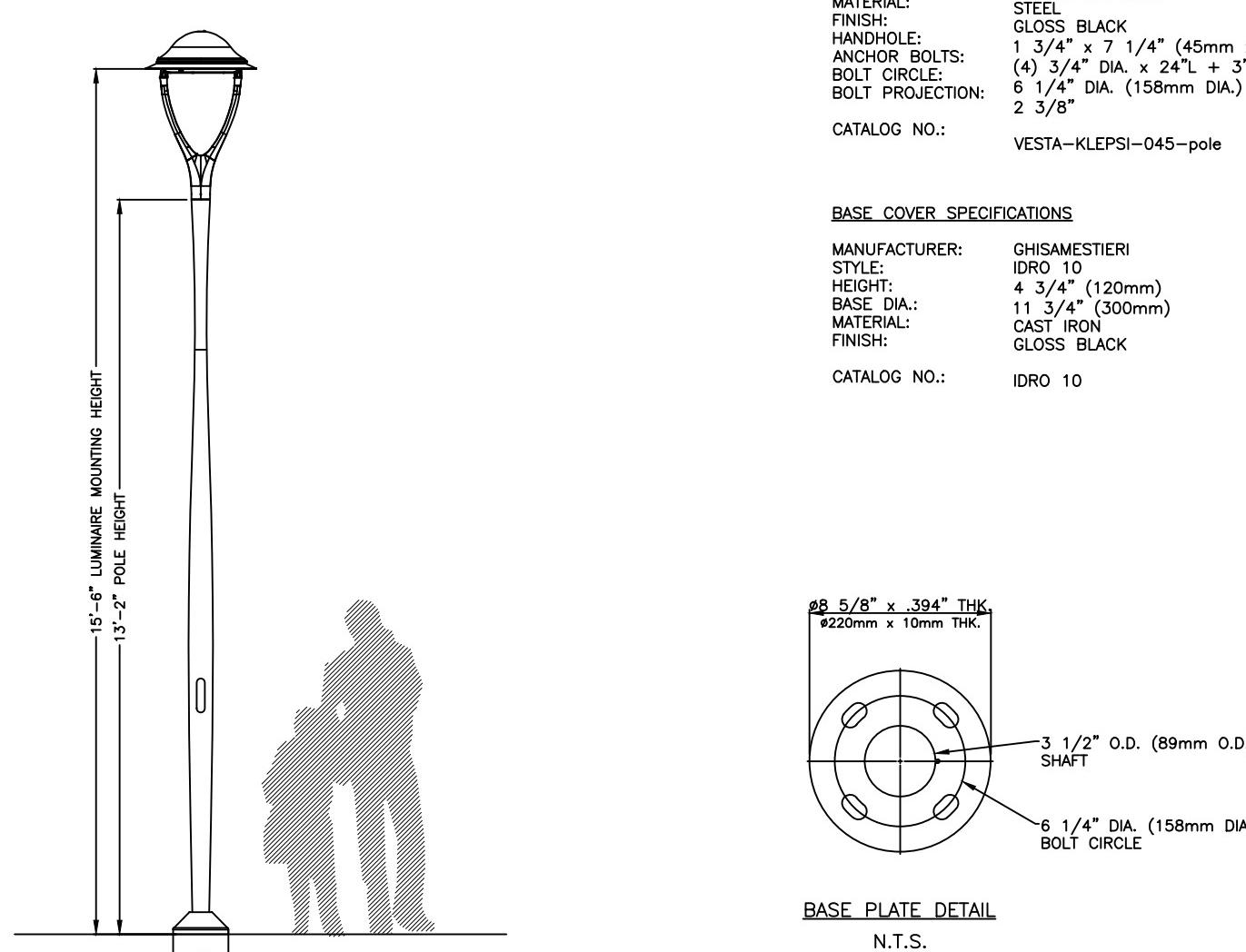


A2J  
ATION: TYPE III  
39W  
525mA  
120-277V  
3000K  
GLOSS BLACK

OSLO S F-A2J-LED-525-3B-



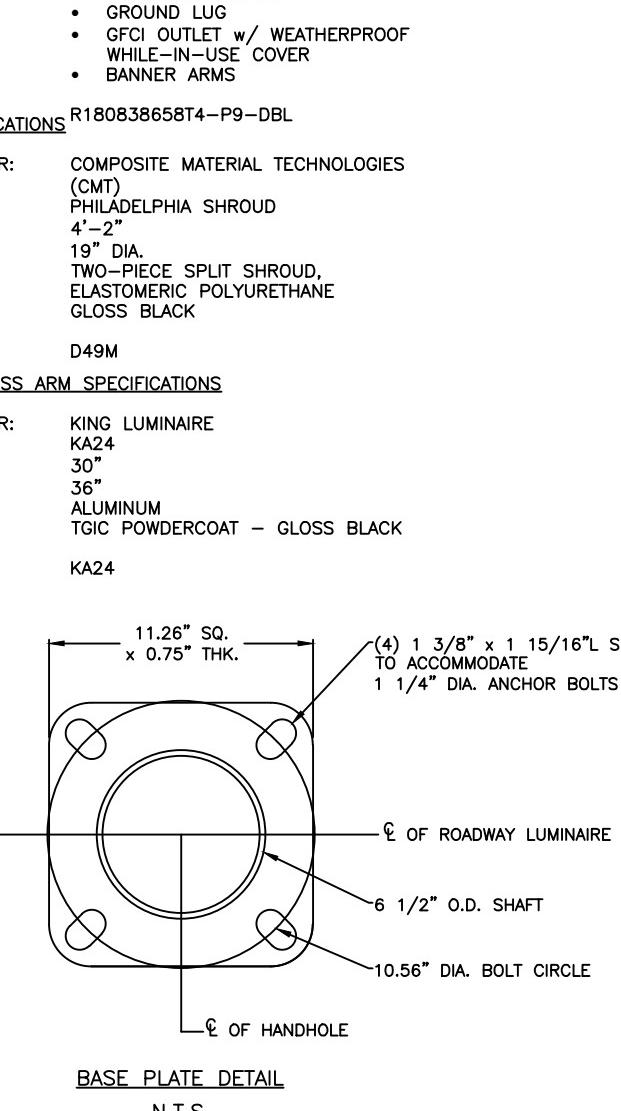
*Photometric Study - WALNUT STREET*



The diagram illustrates a street lamp post (pole) with the following dimensions:

- Total height: 19'-0" (indicated by a vertical dimension line).
- Pole height & roadway luminaire mounting height: 15'-0" (indicated by a vertical dimension line).
- Base height: 4'-2" (indicated by a horizontal dimension line).
- Base width: 1'-6 $\frac{1}{2}$ " (indicated by a horizontal dimension line).

A cross-sectional view of the base is shown on the right, featuring a central vertical column and a surrounding circular base.



Photometric Study - AUSTIN STREET & PHILIP BRAM WAY

Photometric Study - WALNUT STREET										
Luminaire Schedule										
Symbol	Qty	Label	Description (Tag)	Arrangement	IES Class	Arm	MH	LLF	Lum. Lumens	Lum. Watts
	13	L1	Pedestrian Post Top (A)	SINGLE	Type II	0	14.5	0.750	2294	17
	8	L3	Roadway Pendant (E)	SINGLE	Type III	5	24	0.800	9131	59
	4	L3B	Roadway Pendant (G)	SINGLE	Type III	5	24	0.800	16794	124
	8	L7	Roadway Cobrahead (J)	SINGLE	Type III	5	24	0.850	8800	70
	2	L7A	Roadway Cobrahead (K)	SINGLE	Type III	5	24	0.850	12700	105

Photometric Study - AUSTIN STREET & PHILIP BRAM WAY

Luminaire Schedule											
Symbol	Qty	Label	Description	Tag	Arrangement	IES Class	Arm	MH	LLF	Lum. Lumens	Lum. Watts
	8	L1	Pedestrian Post Top (A)	A	SINGLE	Type II	0	14.5	0.750	2294	17
	6	L2	Klepsi Post Top (B)	B	SINGLE	Type II	0	15.5	0.750	4637	35
	8	L6	Roadway Pendant (D)	D	SINGLE	Type III	4	19	0.800	4018	26
	1	EX	Existing 50W HPS Cobrahead	N.A.	SINGLE	Type II	6	25	0.650	2921	50

#### Calculation Summary

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Avg
Austin Street	Illuminance	Fc	1.8	2.9	0.8	2.3	3.6
Philip Bram Way	Illuminance	Fc	1.6	3.0	0.6	2.7	5.0
Austin Sidewalk - EB	Illuminance	Fc	1.0	1.8	0.4	2.5	4.5
Austin Sidewalk - WB	Illuminance	Fc	1.0	1.5	0.5	2.1	3.0
Philip Bram Sidewalk	Illuminance	Fc	1.4	2.4	0.4	3.5	6.0

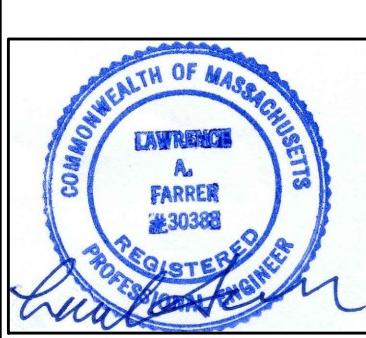
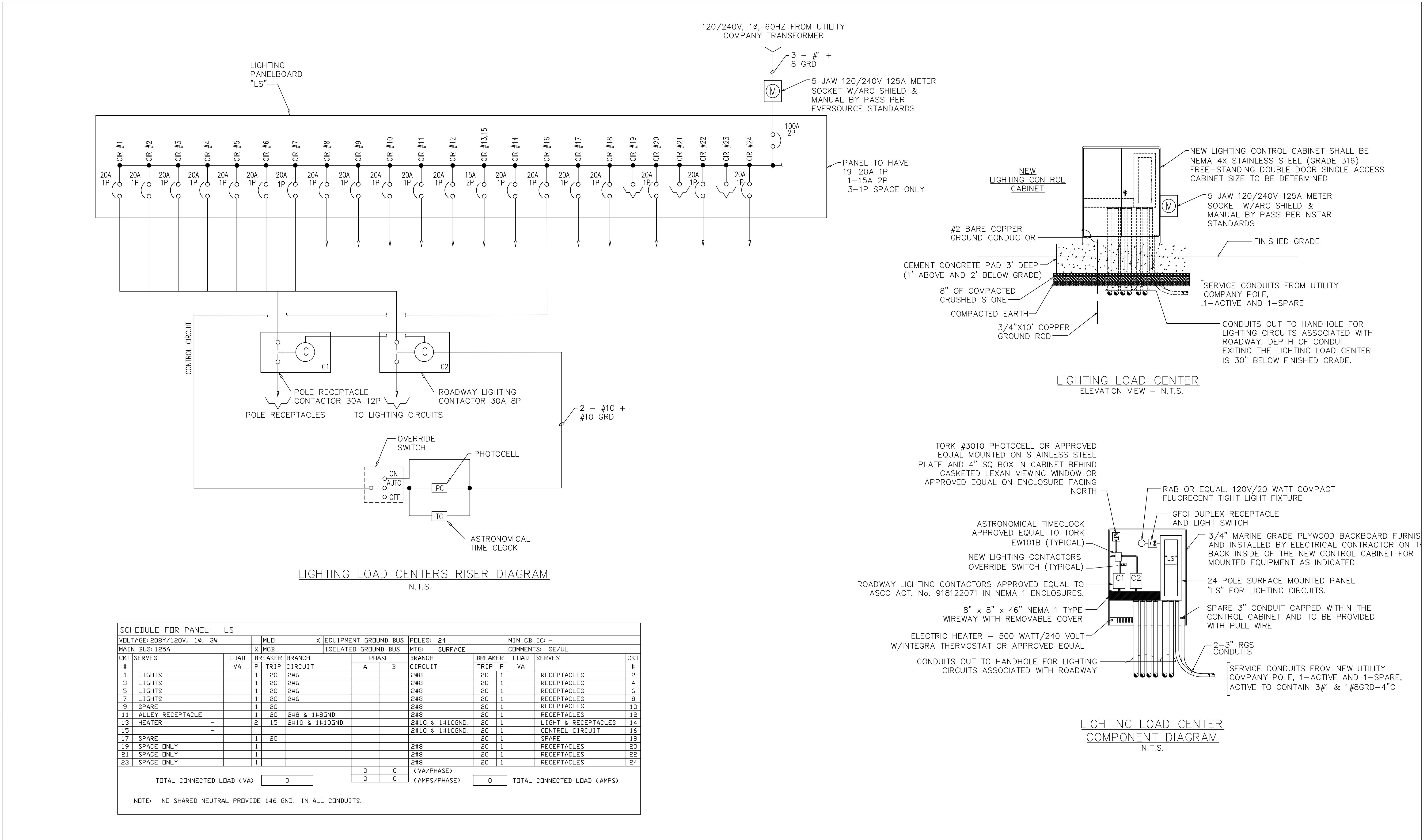
# REHABILITATION OF WALNUT STREET NEWTON, MASSACHUSETTS

## STREET LIGHTING DETAILS - 01

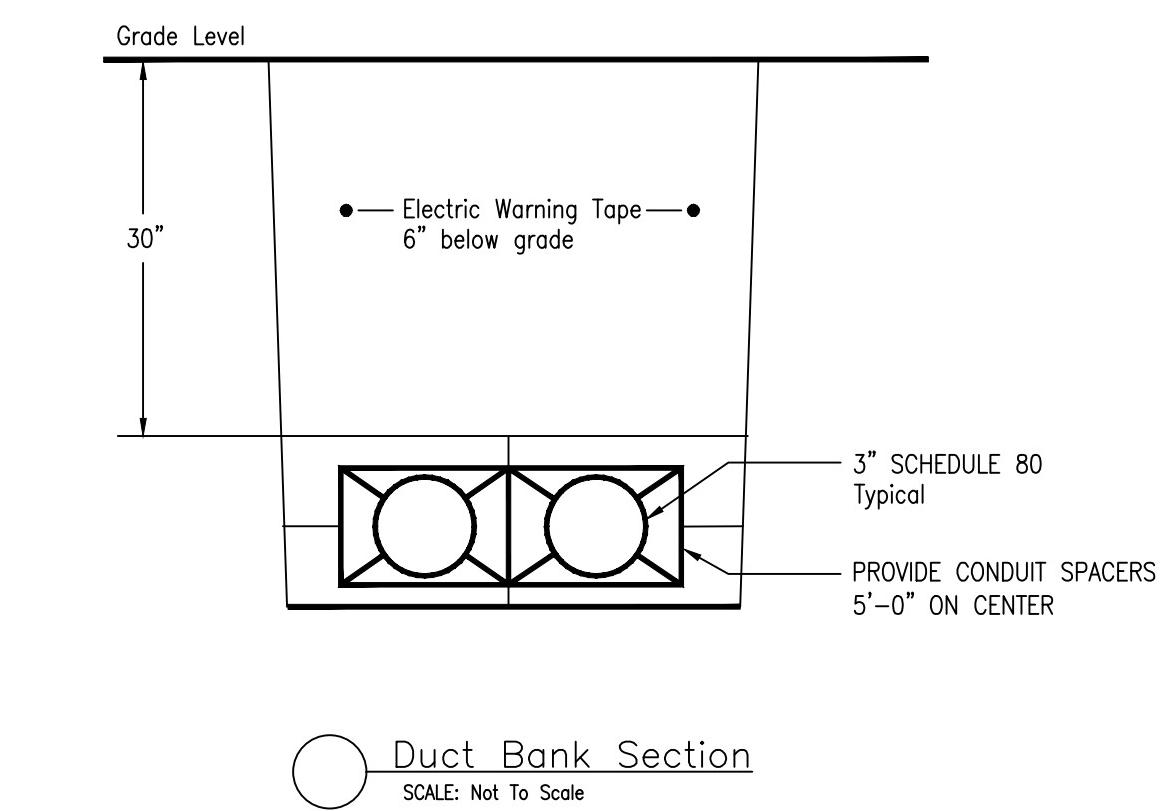
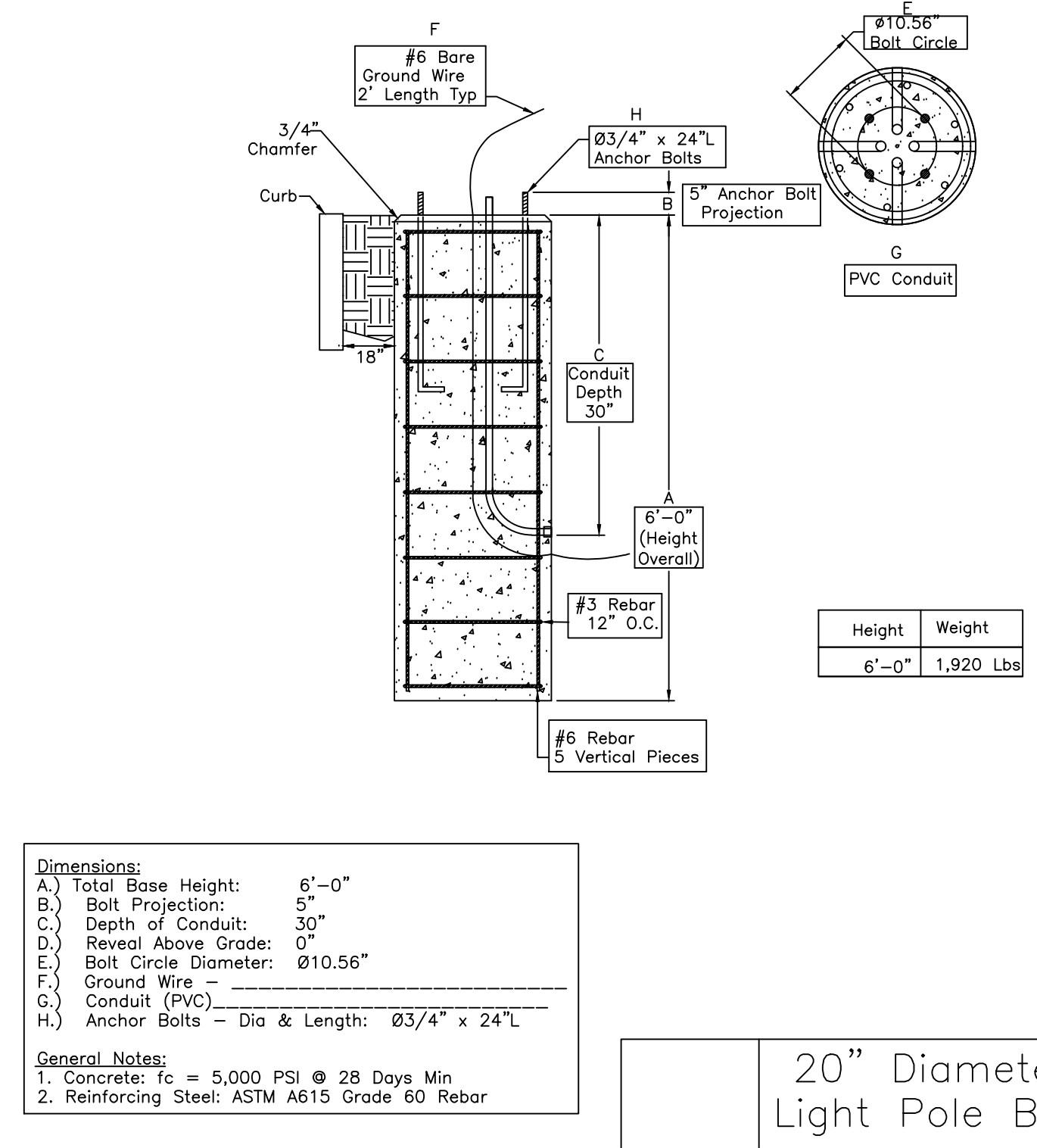
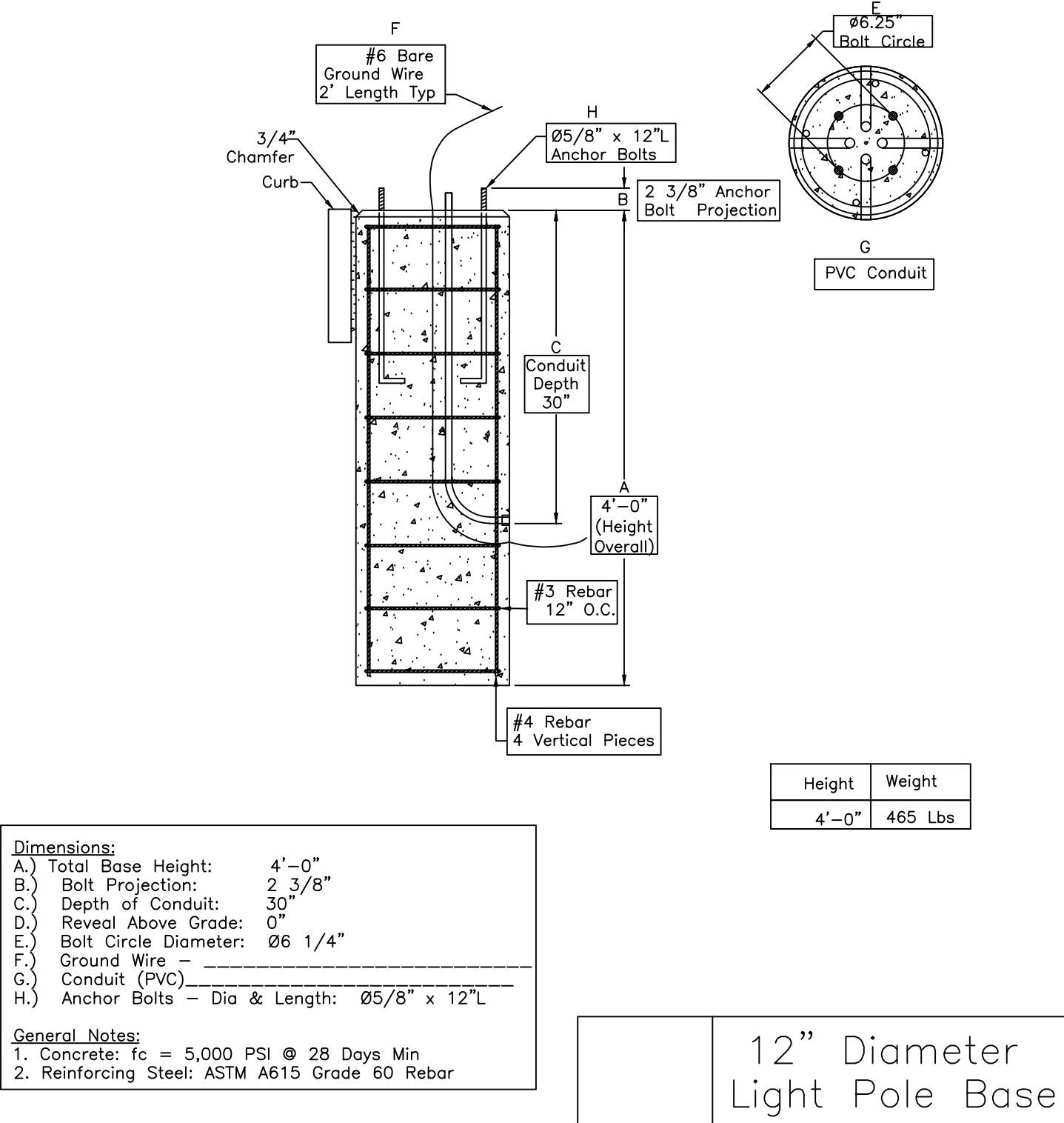
Sheet No.

78

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Scale	AS NOTED
Date	JULY 2019
Job No.	R326-1605.00
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L2 – FOUNDATION – AT GRADE

L6 – FOUNDATION – AT GRADE

